

File 347:JAPIO Nov 1976-2003/Nov(Updated 040308)
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 Derwent WPIX 1963-2004/UD,UM &UP=200418
 Thomson Derwent
 EUROPEAN PATENTS 1978-2004/Mar W01
 2004 European Patent Office
 349:PCT FULLTEXT 1979-2002/UB=20040311,UT=20040304
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Set	Items	Description
S1	131	AU='YUASA T'
S2	11	AU='YUASA TAICHI':AU='YUASA TAIICHI C O KYOTO UNIVERSITY'
S3	53122	(DELET? OR ERAS???) (3N) (DATA OR INFORMATION OR OBJECT? ? OR CONTENT? ? OR ITEM? ? OR MEMORY OR MEMORIES OR RAM OR BLOCK? ? OR BIT? ? OR BYTE? ?)
S4	2	S1:S2 AND S3

4/5/1 (Item 1 from file: 347)
DIALOG(R)File 347:JAPIO
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07045555 **Image available**
METHOD AND DEVICE FOR **ERASING DATA** , AND RECORDING MEDIUM

PUB. NO.: 2001-273189 [JP 2001273189 A]
PUBLISHED: October 05, 2001 (20011005)
INVENTOR(s): **YUASA TAICHI**
APPLICANT(s): KANSAI TLO KK
APPL. NO.: 2000-082955 [JP 200082955]
FILED: March 23, 2000 (20000323)
INTL CLASS: G06F-012/00; G06F-009/44

ABSTRACT

PROBLEM TO BE SOLVED: To provide a method and device for **erasing data** and a recording medium which never damage the real time effectiveness, of the main program, unnecessitates the correction of a main program and can suppress overhead in processing for **erasing unnecessary data** generated in the processing of the main program prepared by using a programming language which generates data dynamically.

SOLUTION: While the main program is interrupted, a function recording area is scanned, and reserving marking for reserving the protection of data in a function recording area indicated directly or indirectly by a pointer recorded in the scanned function recording area is carried out. Then, marking is carried out to the data recording area given reservation marking, and data in the data recording area which is not marked are erased. In the case of interrupting scanning in order to restart the processing of the main program, an instruction for giving priority to scanning over the execution of a function is set as a barrier to the function recording area which is scanned for the last time.

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4/5/2 (Item 1 from file: 350)
DIALOG(R)File 350:Derwent WPIX
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015514665 **Image available**
WPI Acc No: 2003-576812/200354
XRPX Acc No: N03-458502

Data deletion method for application software program, involves carrying out scanning process over destruction of function recording region when barrier is set at corresponding recording region

Patent Assignee: YUASA T (YUAS-I)

Inventor: **YUASA T**

Number of Countries: 001 Number of Patents: 001

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
US 20030093397	A1	20030515	US 2001993382	A	20011114	200354 B

Priority Applications (No Type Date): US 2001993382 A 20011114

Patent Details:

Patent No	Kind	Lan Pg	Main IPC	Filing Notes
US 20030093397	A1	25	G06F-007/00	

Abstract (Basic): US 20030093397 A1

NOVELTY - The function recording regions stacked in the stack region, are scanned and markings are provided in advance for protecting the data in data recording region. A barrier is set for restricting execution of function in function recording region. The scanning is carried out over destruction of function recording region when a barrier set at function recording region which is destroyed after function execution.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for the

following:

(1) **data deletion** apparatus; and

(2) recorded medium storing **data deletion** program.

USE - For **deleting** unnecessary **data** generated in application software program such as Java, C++,Lisp and Prolog.

ADVANTAGE - Effectively **deletes** the unnecessary **data** recorded in data recording region without loss of real time property, on processing the main program. Avoids **deletion** of necessary **data** , prevents generation of process abnormalities and the overhead is controlled.

DESCRIPTION OF DRAWING(S) - The figure shows the **block** diagram of **data deletion** apparatus.

pp; 25 DwgNo 1/15

Title Terms: DATA; DELETE; METHOD; APPLY; SOFTWARE; PROGRAM; CARRY; SCAN; PROCESS; DESTROY; FUNCTION; RECORD; REGION; BARRIER; SET; CORRESPOND; RECORD; REGION

Derwent Class: T01

International Patent Class (Main): G06F-007/00

File Segment: EPI

File 347:JAPIO Nov 1976-2003/Nov(Updated 040'308)

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File 350:Derwent WPIX 1963-2004/UD,UM &UP=200418

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Set	Items	Description
S1	1692	GARBAGE(2N)COLLECT? OR AUTOMAT?(2N)MEMOR??? (2N)MANAG? OR RECYCL??? (3N) (MEMORY OR RAM)
S2	59565	(DELET? OR ERAS??? OR PURG??? OR CLEAN??? OR CLEAR??? OR FLUSH??? OR WIP??? OR ELIMINAT?) (3N) (DATA OR INFORMATION OR OBJECT? ? OR CONTENT? ? OR ITEM? ? OR MEMORY OR MEMORIES OR RAM OR BIT? ? OR BYTE? ?)
S3	79587	(RESTRICT? OR PROHIBIT? OR STOP? OR PREVENT? OR IMPED? OR SUPPRESS? OR DETER? ? OR DETERRING OR BAR? ? OR BARRED OR BARRING OR FORBID?) (7N) (DELET? OR ERAS??? OR PURG??? OR CLEAN??? OR CLEAR??? OR FLUSH? OR WIP??? OR ELIMINAT?)
S4	38682	(PROTECT? OR SAFEGUARD??? OR GUARD??? OR SHIELD??? OR BARRIER OR DEFEND? OR DEFENSE) (7N) (DATA OR INFORMATION OR OBJECT? ? OR CONTENT? ? OR ITEM? ? OR MEMORY OR MEMORIES OR RAM OR BIT? ? OR BYTE? ?)
S5	65644	(MARK???? OR MARKER? ? OR FLAG? ? OR FLAGGING OR TAG? ? OR TAGGING OR LABEL?) (7N) (DATA OR INFORMATION OR OBJECT? ? OR CONTENT? ? OR ITEM? ? OR ENTRY OR ENTRIES OR MEMOR??? OR RAM OR BIT? ? OR BYTE? ? OR ADDRESS?? OR POINTER??)
S6	166	S1:S2 AND S3:S4 AND S5
S7	79	S6 AND IC=G06F
S8	21386	(DELET? OR ERAS???) (3N) (DATA OR INFORMATION)
S9	52	(S1 OR S8) AND S3:S4 AND S5 AND IC=G06F
S10	27	S7 NOT S9

9/5/6 (Item 6 from file: 347)
DIALOG(R) File 347:JAPIO
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06496612

METHOD OF RECORDING **INFORMATION** FOR PROCESSING **OBJECT** DIVISION AND
ERASE PROHIBITIVE FLAG, AND MEDIUM AND REPRODUCING DEVICE THEREFOR

PUB. NO.: 2000-082276 [JP 2000082276 A]
PUBLISHED: March 21, 2000 (20000321)
INVENTOR(s): KIKUCHI SHINICHI
 ANDO HIDEO
 MIMURA HIDENORI
 TAIRA KAZUHIKO
 ITO YUJI
APPLICANT(s): TOSHIBA CORP
 TOSHIBA AVE CO LTD
APPL. NO.: 11-193106 [JP 99193106]
FILED: July 07, 1999 (19990707)
PRIORITY: 10-192065 [JP 98192065], JP (Japan), July 07, 1998 (19980707)
INTL CLASS: G11B-027/00; **G06F-012/00** ; G11B-019/04; G11B-020/10

ABSTRACT

PROBLEM TO BE SOLVED: To enable an adventurous and efficient management by re-structuring an advanced program set by dividing an existing program and new management information capable of reproducing other existing programs, and adding **erase disabled information** to the new management information corresponding to the advanced program belonging to a set range.

SOLUTION: In a reproduction management information sub-area in a management area of a recording medium, a region for arranging an erase disabled flag in a program unit and/or a cell unit is secured. The recording medium is composed of a management area and a data area, and the management area contains a management table for managing programs (sequence), a management table for managing cells, and a management table for managing data units independently or mutually included (subordinately). An area is secured for recording the **erase disabled information** in the program management table or the cell management table. Moreover, the **erase disabled information** can be secured in both tables.

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9/5/7 (Item 7 from file: 347)
DIALOG(R) File 347:JAPIO
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*****Image available*****
REORDERER/REPRODUCER FOR FLASH ERASE MEMORY

PUB. NO.: 11-306767 [JP 11306767 A]
PUBLISHED: November 05, 1999 (19991105)
INVENTOR(s): HAYASHI KOZO
 TOCHIHARA KATSUHIRO
 KIMURA MINORU
 KISHIMOTO KAZUHIRO
 KAWAMOTO YUKIO
 MIWA KENJI
APPLICANT(s): SHARP CORP
APPL. NO.: 10-108073 [JP 98108073]
FILED: April 17, 1998 (19980417)
INTL CLASS: G11C-016/02; **G06F-012/02**

ABSTRACT

PROBLEM TO BE SOLVED: To quicken recording of auxiliary **information** into a flash **erase** memory while decreasing the number of times for block erase.

SOLUTION: A flash memory 1 comprises a chip group 1' of a plurality of

flash memory chips 7, 8, 9,..., and a protect switching means 5. A control circuit 2 refers to the protect switching means 5, or the like, and records a data in the flash memory chips 7, 8, 9,... in units of block if it is possible. **Flags** indicative of the auxiliary information of the data are also recorded in same block as the data in the flash memory chips 7, 8, 9,... Recording area of the auxiliary information is set to have a number of bits not less than an inter times of the number of bits constituting the auxiliary information so that the auxiliary information can be recorded a plurality of times for different bits in same auxiliary recording area. According to the arrangement, the number of times required for flash erase and rerecording of a block incident to recording of the auxiliary information can be decreased.

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9/5/8 (Item 8 from file: 347)
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06308350 **Image available**
METHOD AND DEVICE FOR FILE MANAGEMENT

PUB. NO.: 11-249947 [JP 11249947 A]
PUBLISHED: September 17, 1999 (19990917)
INVENTOR(s): AKIBA SHINJIRO
IIDA KENICHI
APPLICANT(s): SONY CORP
APPL. NO.: 10-048074 [JP 9848074]
FILED: February 27, 1998 (19980227)
INTL CLASS: G06F-012/00 ; G06F-011/00 ; G06F-012/16

ABSTRACT

PROBLEM TO BE SOLVED: To provide the method and device for file management which miniaturize a main body and can manage a file of halfway recorded/ deleted data even when a power source battery is removed during the recording/ deleting operation to stop this operation.

SOLUTION: When a power source is turned on, a CPU 32 copies 'a block map' of a flash memory 9 to a RAM 34 to read out the block number of the leading block of a file from 'a directory' of the flash memory 9. The CPU 32 sets all the flags corresponding to individual blocks of this file to 'busy' and writes set flags in the flash memory 9.

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9/5/9 (Item 9 from file: 347)
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06083488 **Image available**
STORAGE DEVICE, METHODS FOR WRITING AND READING OUT DATA AND RECORDING MEDIUM

PUB. NO.: 11-025002 [JP 11025002 A]
PUBLISHED: January 29, 1999 (19990129)
INVENTOR(s): SASA SATORU
SUZUKI YUICHI
APPLICANT(s): SONY CORP
APPL. NO.: 09-181540 [JP 97181540]
FILED: July 07, 1997 (19970707)
INTL CLASS: G06F-012/16 ; G11C-016/02

ABSTRACT

PROBLEM TO BE SOLVED: To extend the life of a flash memory by preventing the concentration of damages due to data erasing /writing into a specific cell.

SOLUTION: A CPU determines whether read **data** are new or not and an inversion **flag** has been set up or not (steps S1, S2). When the inversion flag is not set up yet, the **flag** is set up (step S3) and **data** are written in the flash memory after inverting the **data bits** (steps S4, S6). When the inversion **flag** has been set up, the **flag** is reset (step S5), and then **data** are written in the flash memory (step S6).

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9/5/10 (Item 10 from file: 347)
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05992002 **Image available**
DATA STORING METHOD

PUB. NO.: 10-275102 [JP 10275102 A]
PUBLISHED: October 13, 1998 (19981013)
INVENTOR(s): MIURA YASUSHI
KUTSUMI HIROSHI
IMANAKA TAKESHI
IMAI KIYOSHI
WADA SATOAKI
APPLICANT(s): MATSUSHITA ELECTRIC IND CO LTD [000582] (A Japanese Company
or Corporation), JP (Japan)
APPL. NO.: 09-079922 [JP 9779922]
FILED: March 31, 1997 (19970331)
INTL CLASS: [6] G06F-012/00 ; G06F-012/00
JAPIO CLASS: 45.2 (INFORMATION PROCESSING -- Memory Units)

ABSTRACT

PROBLEM TO BE SOLVED: To eliminate trouble arising when individual users of a family optionally use stored data that all of the family share by adding an erasure mark to a place corresponding to a user identifier in an erasure identifier area and **erasing data** when **erasure marks** as many as the members of the family are obtained.

SOLUTION: A family information setting means 21 sets family information. A data adding means 22 adds the family information set by the family information setting means 21 and the **erasure** identifier area to **data** sent through a public line. A user identifier input means 23 inputs a user identifier specifying a user of the family. An erasure mark adding means 24 adds an erasure mark corresponding to the user identifier inputted by the user identifier input means 23. A data storing means 25 stores the data inputted through the public line, family **information**, and **erasure mark**. Then a **data erasing** means 26 **erases** the **data** stored in the data storage means 25. Consequently, the stored **data** can be **protected**.

9/5/11 (Item 11 from file: 347)
DIALOG(R)File 347:JAPIO
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05597512 **Image available**
PRINTER CONTROLLER AND ITS REGISTERED DATA MANAGING METHOD

PUB. NO.: 09-212312 [JP 9212312 A]
PUBLISHED: August 15, 1997 (19970815)
INVENTOR(s): TOKURA YUTAKA
APPLICANT(s): CANON INC [000100] (A Japanese Company or Corporation), JP
(Japan)
APPL. NO.: 08-015241 [JP 9615241]
FILED: January 31, 1996 (19960131)
INTL CLASS: [6] G06F-003/12 ; B41J-005/30
JAPIO CLASS: 45.3 (INFORMATION PROCESSING -- Input Output Units); 29.4
(PRECISION INSTRUMENTS -- Business Machines)

JAPIO KEYWORD:R002 (LASERS); R131 (INFORMATION PROCESSING -- Microcomputers
& Microprocessors)

ABSTRACT

PROBLEM TO BE SOLVED: To **prevent** registered **data** from being **deleted** randomly and securely process received print information in a finite memory resource by setting management information indicating whether the registered **data** can be **deleted** or not.

SOLUTION: When the registered data is sent from a host computer 101 to a printer 100, a data analyzing function part 103 of a CPU 111 stores the registered data name and registered data entity in a registered data buffer memory 105. And, when a registered **data deletion** instruction is sent from the host computer 101, the data analyzing function part 103 sets a true/false value sent for the deletion **flag** corresponding to the registered **data** name in the memory 105. When the data analyzing function part 103 judges that the memory area of the page buffer memory 105 is deficient while processing print data sent from the host computer 101, the registered **data** whose **deletion flags** are true in the **memory** 105 are **deleted** and deleted preferentially.

9/5/12 (Item 12 from file: 347)
DIALOG(R)File 347:JAPIO
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04764881 **Image available**
STORAGE DEVICE

PUB. NO.: 07-057481 [JP 7057481 A]
PUBLISHED: March 03, 1995 (19950303)
INVENTOR(s): HASHIMOTO NAOKI
APPLICANT(s): BROTHER IND LTD [000526] (A Japanese Company or Corporation),
JP (Japan)
APPL. NO.: 05-196488 [JP 93196488]
FILED: August 06, 1993 (19930806)
INTL CLASS: [6] G11C-016/06; **G06F-012/02**
JAPIO CLASS: 45.2 (INFORMATION PROCESSING -- Memory Units); 42.2
(ELECTRONICS -- Solid State Components)
JAPIO KEYWORD:R131 (INFORMATION PROCESSING -- Microcomputers &
Microprocessors)

ABSTRACT

PURPOSE: To decrease the number of writing information in a nonvolatile memory and to prevent consumption of a nonvolatile memory in which the number of writing is **restricted** by separating **information** indicated to **erase** from others with a **flag** without erasing instantly and erasing **information** when usable storage capacity becomes insufficient.

CONSTITUTION: A storage device is constituted centering a printer 1, a cartridge 3 in which a flash ROM 2 is incorporated is mounted to the printer 1 in freely attachably and detachably, and writing information is inputted to the ROM 2 by a host computer 4. The printer 1 is constituted with a CPU1a, a ROM1b storing a control program of the ROM 2, a RAM1c storing temporarity information, a ROM1d controlling writing and erasing, an input/output interface 1e, and a panel operational section 1g. Also, a erasing flag control section 1d' is provided in the ROM1d and a receiving buffer 1c' storing temporarily information is provided in the RAM1c. When indication for **erasing information** is issued from the computer 4 or the operational section 1g, the control section 1d' is driven, an erasing flag is set to '1'.

9/5/13 (Item 13 from file: 347)
DIALOG(R)File 347:JAPIO
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04587563 **Image available**

TERMINAL EQUIPMENT FOR WINDOW TRANSACTION

PUB. NO.: 06-259463 [JP 6259463 A]
PUBLISHED: September 16, 1994 (19940916)
INVENTOR(s): KATADA MASUISA
MURATANI CHIE
APPLICANT(s): HITACHI LTD [000510] (A Japanese Company or Corporation), JP
(Japan)
APPL. NO.: 05-045196 [JP 9345196]
FILED: March 05, 1993 (19930305)
INTL CLASS: [5] G06F-015/30 ; G06F-015/30 ; G07D-009/00
JAPIO CLASS: 45.4 (INFORMATION PROCESSING -- Computer Applications); 29.4
(PRECISION INSTRUMENTS -- Business Machines)
JAPIO KEYWORD: R087 (PRECISION MACHINES -- Automatic Banking)
JOURNAL: Section: P, Section No. 1843, Vol. 18, No. 659, Pg. 140,
December 13, 1994 (19941213)

ABSTRACT

PURPOSE: To **prevent** the **erasure** caused by a redisplay of data inputted already by inhibiting the redisplay corresponding to the whole image or a display field by referring to a flag, in the case it is instructed to display a transaction image.

CONSTITUTION: In the case a magnetic stripe of a bankbook, etc., is read in by a magnetic stripe reader 5, after an operator inputs the amount of a transaction to a transaction money amount field, a control part 6 decides whether a **flag** 9 of designated image **data information** 8 is '1' or not, and whether the transaction screen concerned is displayed already or not. In the case the flag 9 is '1', and also, the transaction image is displayed already, a reaccess of the transaction screen is inhibited and the display of the transaction image which is being displayed is continued without **erasing** the inputted **data**, and the subsequent transaction processing is executed. On the other hand, in the case the flag is '0', a redisplay of the transaction image is executed by accessing the image data information 8 of the transaction image, the subsequent transaction processing is executed by inputting newly data, and the processing is finished.

9/5/14 (Item 14 from file: 347)

DIALOG(R) File 347:JAPIO
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04167078 **Image available**
PICTURE INFORMATION STORAGE DEVICE

PUB. NO.: 05-158778 [JP 5158778 A]
PUBLISHED: June 25, 1993 (19930625)
INVENTOR(s): YANAGAWA HITOSHI
APPLICANT(s): CANON INC [000100] (A Japanese Company or Corporation), JP
(Japan)
APPL. NO.: 03-350034 [JP 91350034]
FILED: December 09, 1991 (19911209)
INTL CLASS: [5] G06F-012/00 ; G06F-015/62 ; H04N-001/21
JAPIO CLASS: 45.2 (INFORMATION PROCESSING -- Memory Units); 42.5
(ELECTRONICS -- Equipment); 44.7 (COMMUNICATION -- Facsimile)
; 45.4 (INFORMATION PROCESSING -- Computer Applications)
JAPIO KEYWORD: R131 (INFORMATION PROCESSING -- Microcomputers &
Microprocessors)
JOURNAL: Section: P, Section No. 1627, Vol. 17, No. 560, Pg. 19,
October 08, 1993 (19931008)

ABSTRACT

PURPOSE: To improve the operability by **preventing** the **deletion** of image **information** to be stored while applying a nonerasable **flag** to nonerasable **information** in a page unit to be stored.

CONSTITUTION: A keyboard 24 has a nonerasable key in addition to the normal

alphabetic and numeric keys. When the nonerasable key is turned on, the read image **information** is stored with the nonerasable **flag** added in a page unit. A controller 26 monitors the state of the nonerasable key and decides whether or not the nonerasable flag should be added. Thus, when the deletion processing of the magneto-optical disk filing the image information is directed by a deletion key, a controller 26 judges whether or not the nonerasable **flag** is added to the image **information** of each page. When it is added, the picture of this page should not be deleted. Thus, an erroneous **deletion** of the necessary **information** can be prevented.

9/5/15 (Item 15 from file: 347)

DIALOG(R)File 347:JAPIO

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04138648 **Image available**

METHOD AND DEVICE FOR OUTPUTTING COLOR IMAGE

PUB. NO.: 05-130348 [JP 5130348 A]

PUBLISHED: May 25, 1993 (19930525)

INVENTOR(s): YAMAKAWA SHINJI

AIDA MIDORI

KAMO YASUSHI

HAYASHI MASAYUKI

APPLICANT(s): RICOH CO LTD [000674] (A Japanese Company or Corporation), JP
(Japan)

APPL. NO.: 03-289803 [JP 91289803]

FILED: November 06, 1991 (19911106)

INTL CLASS: [5] H04N-001/23; G06F-015/66 ; G06F-015/66 ; G09G-005/02;
H04N-001/00; G09G-005/30

JAPIO CLASS: 44.7 (COMMUNICATION -- Facsimile); 44.9 (COMMUNICATION --
Other); 45.4 (INFORMATION PROCESSING -- Computer
Applications)

JOURNAL: Section: E, Section No. 1431, Vol. 17, No. 508, Pg. 139,
September 13, 1993 (19930913)

ABSTRACT

PURPOSE: To make the deletion of a mark difficult, and to improve the reliability of security protection by automatically changing the color of character pattern information in accordance with a position on the pattern concerned or a position on an input image.

CONSTITUTION: A first .gamma. correction circuit 310 corrects gray balance of input image information outputted from an image scanner 100. A delay circuit 320 delays an output of the image information in order to fit a timing of the image **information** to a delay of detection in a **mark** area detecting circuit. A masking circuit 330 converts color image information of three colors of R, G and B to color image information of four colors of C, M, Y and BK(black), and a second .gamma. correction circuit 340 executes a gradation correction corresponding to a recording characteristic of a printer 200. A **mark information** generating circuit 370 outputs a **mark information** synthesizing circuit at a prescribed timing. In such a way, it is difficult to **erase** the additional **information**, and reliability of security **protection** can be enhanced.

9/5/16 (Item 16 from file: 347)

DIALOG(R)File 347:JAPIO

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03901034 **Image available**

INFORMATION PROCESSOR WITH DATA EMERGENCY SAVING FUNCTION

PUB. NO.: 04-266134 [JP 4266134 A]

PUBLISHED: September 22, 1992 (19920922)

INVENTOR(s): KURIYAMA SEIICHI

APPLICANT(s): NEC CORP [000423] (A Japanese Company or Corporation), JP

(Japan)
APPL. NO.: 03-027027 [JP 9127027]
FILED: February 21, 1991 (19910221)
INTL CLASS: [5] G06F-011/34 ; G06F-003/06 ; G06F-011/20
JAPIO CLASS: 45.1 (INFORMATION PROCESSING -- Arithmetic Sequence Units);
45.3 (INFORMATION PROCESSING -- Input Output Units)
JOURNAL: Section: P, Section No. 1480, Vol. 17, No. 54, Pg. 98,
February 03, 1993 (19930203)

ABSTRACT

PURPOSE: To **prevent** the **erasure** of **data** by writing the produced data onto a flexible disk when an error trap occurs.

CONSTITUTION: A switch is provided (steps 11 and 12) to designate whether the data designated previously is written on a flexible disk or not with occurrence of an error trap together with a means which sets (step 13) a new instruction including a saving variable name in its parameter when the data is carried out, and a storage means where a **data** saving processing **flag** to which the presence or absence of the data saving is written and a saving variable name store table are set in a work area. When the execution of a data saving operation is decided, a saving variable name is read out and the data on the designated variable name is drawn out of an internal storage means. Then a saving file is opened (step 14) to the flexible disk in a specific reserved file name and the data are written (step 15). Thus it is possible to **prevent** the **erasure** of **data** from being caused by an error occurring at correction of a program, etc.

9/5/17 (Item 17 from file: 347)
DIALOG(R) File 347:JAPIO
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03659723 **Image available**
MAGNETIC DISK DEVICE AND ITS CONTROL SYSTEM

APPL. NO.: 04-024823 [JP 4024823 A]
FILED: January 28, 1992 (19920128)
INVENTOR(s): MOCHIDA HIROYUKI
APPLICANT(s): HITACHI LTD [000510] (A Japanese Company or Corporation), JP
(Japan)
APPL. NO.: 02-129068 [JP 90129068]
FILED: May 21, 1990 (19900521)
INTL CLASS: [5] G06F-003/06 ; G11B-005/09; G11B-019/00; G11B-020/10
JAPIO CLASS: 45.3 (INFORMATION PROCESSING -- Input Output Units); 42.5
(ELECTRONICS -- Equipment)
KEYWORD: R131 (INFORMATION PROCESSING -- Microcomputers &
Microprocessors)
JOURNAL: Section: P, Section No. 1348, Vol. 16, No. 189, Pg. 88, May
08, 1992 (19920508)

ABSTRACT

PURPOSE: To **prevent** the **erasure** of **data** caused by the cut-off of a power supply, etc., by writing the data stored in the data buffer backed up by a power supply different from that of a disk device and having the capacity equivalent to one sector or more onto the disk surface in a state separated from a host system device.

CONSTITUTION: A data buffer 120 is backed up by a power supply 130 different from that of a disk device 1 and the data stored in the buffer 120 are stored as they are even if the power supply of the device 1 is cut off. Then the data are written onto the disk surface from the buffer 120 and the data equivalent to one sector or more are transferred to the buffer 120 from a host system device. As a result, the data written onto the disk surface are always secured for each sector. Furthermore a flag register 108 is also backed up like the buffer 120 and consists of a flag showing the executing mode of a write command and a **flag** showing that the **data** stored in the buffer 120 are valid by an amount equivalent to one sector or more. Thus the data destroyed by the interruption of the writing

data can be recovered and the reliability of the disk is improved.

9/5/18 (Item 18 from file: 347)
DIALOG(R) File 347:JAPIO
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03575634 **Image available**
MEMORY DATA GATHERING SYSTEM

PUB. NO.: 03-238534 [JP 3238534 A]
PUBLISHED: October 24, 1991 (19911024)
INVENTOR(s): SHIOMI NORIKO
APPLICANT(s): NEC CORP [000423] (A Japanese Company or Corporation), JP
(Japan)
APPL. NO.: 02-034105 [JP 9034105]
FILED: February 15, 1990 (19900215)
INTL CLASS: [5] G06F-011/34
JAPIO CLASS: 45.1 (INFORMATION PROCESSING -- Arithmetic Sequence Units)
JOURNAL: Section: P, Section No. 1301, Vol. 16, No. 24, Pg. 103,
January 21, 1992 (19920121)

ABSTRACT

PURPOSE: To prevent preceding information from being erased by providing a memory data gathering flag with information indicating whether memory data is gathered once or not.

CONSTITUTION: A central processing unit 2 gathers required memory data from memory 1 to turn on a memory data gathering flag 3. Gathered memory data and memory gathering information of the memory data gathering flag 3 are transferred to the another area of the central processing unit 2 so that a user can see memory data at any time. When the user recognizes the malfunction to depress a data gathering key, the central processing unit 2 reads in the memory data gathered from the gathered data area of the memory 1 and displays it on an output device 4. Thus, the memory data at the time of the occurrence of malfunction is freely gathered and checked.

9/5/19 (Item 19 from file: 347)
DIALOG(R) File 347:JAPIO
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03425157 **Image available**
DMA DATA TRANSFER SYSTEM

PUB. NO.: 03-088057 [JP 3088057 A]
PUBLISHED: April 12, 1991 (19910412)
INVENTOR(s): ANZAI MASATAKA
APPLICANT(s): NEC CORP [000423] (A Japanese Company or Corporation), JP
(Japan)
APPL. NO.: 01-225151 [JP 89225151]
FILED: August 31, 1989 (19890831)
INTL CLASS: [5] G06F-013/28
JAPIO CLASS: 45.2 (INFORMATION PROCESSING -- Memory Units)
JOURNAL: Section: P, Section No. 1224, Vol. 15, No. 268, Pg. 36, July
08, 1991 (19910708)

ABSTRACT

PURPOSE: To prevent transfer data from being erased by resetting a flag at the time-out of a timer, setting up the leading address of a block for successively executing DMA data transfer in a base address register and setting up the number of transfer data of the block for the succeeding DMA data transfer in a base counting address.

CONSTITUTION: A control means 11 executes data transfer in accordance with the contents of a current address register 12 and a flag 16 is set up the time of ending the transfer of the block executing DMA data transfer at

present in accordance with the contents of a current count register 17. When the flag 16 is set up at the time-over of the timer 3, a central processing unit 2 resets the **flag** 16, sets up the start **address** of the block for executing the succeeding DMA data transfer in a base address register 14 and then sets up the number of transfer data of the block for executing the succeeding DMA data transfer in a base count register 19.

9/5/20 (Item 20 from file: 347)

DIALOG(R)File 347:JAPIO

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03389047 **Image available**

INFORMATION REGISTER DEVICE FOR PROPER VERIFYING DEVICE

PUB. NO.: 03-051947 [JP 3051947 A]

PUBLISHED: March 06, 1991 (19910306)

INVENTOR(s): MIZUNO HIROMASA

APPLICANT(s): MITSUBISHI ELECTRIC CORP [000601] (A Japanese Company or Corporation), JP (Japan)

APPL. NO.: 01-186582 [JP 89186582]

FILED: July 19, 1989 (19890719)

INTL CLASS: [5] G06F-015/00 ; G06F-015/30

CLASS: 45.4 (INFORMATION PROCESSING -- Computer Applications)

KEYWORD: R087 (PRECISION MACHINES -- Automatic Banking); R131

(INFORMATION PROCESSING -- Microcomputers & Microprocessors)

JOURNAL: Section: P, Section No. 1205, Vol. 15, No. 201, Pg. 106, May 23, 1991 (19910523)

ABSTRACT

PURPOSE: To completely **prevent** double registration by setting a **deletion flag** opposite to the proper **information** to distinguish the proper information from the effective proper information and therefore to collate the proper **information** including the **deleted** one with each other when the proper information is registered.

CONSTITUTION: A flag set means 4 sets a deletion **flag** for the proper **information** stored in a storage means 1 and to be deleted with the input received from a register deletion means 2. When the proper information to be registered is inputted from a register means 3, a deciding means 5 decides whether the proper information is stored in the means 1 or not. If so, it is decided whether the deletion flag is set or not. The deciding result is reported via a report means 6. As a result, the double registration is completely **prevented** since the **deleted** registered proper **information** is also regarded as a subject of collation. Thus it is possible to prevent such an inconvenient case where a storage medium like a magnetic card, etc., is issued twice by mistake.

9/5/21 (Item 21 from file: 347)

DIALOG(R)File 347:JAPIO

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03272257 **Image available**

LOGGING PROCESSING SYSTEM AT THE TIME OF GENERATING COMMON BUS ADAPTOR ERROR

PUB. NO.: 02-247757 [JP 2247757 A]

PUBLISHED: October 03, 1990 (19901003)

INVENTOR(s): KUSHIDA SADA AKI

APPLICANT(s): FUJITSU LTD [000522] (A Japanese Company or Corporation), JP (Japan)

APPL. NO.: 01-069064 [JP 8969064]

FILED: March 20, 1989 (19890320)

INTL CLASS: [5] G06F-013/00 ; G06F-011/34

CLASS: 45.2 (INFORMATION PROCESSING -- Memory Units); 45.1

(INFORMATION PROCESSING -- Arithmetic Sequence Units)

JOURNAL: Section: P, Section No. 1146, Vol. 14, No. 577, Pg. 31,

December 21, 1990 (19901221)

ABSTRACT

PURPOSE: To **prevent** error information from being **erased** until the end of logging in the case of a common bus adaptor without stopping the operation of an unrelated device at the time of generating an error by providing the common bus adaptor with a log information collecting state collecting means.

CONSTITUTION: When a fault is generated in the common bus adaptor 4, a CPU 1 reads out the **contents** of a **flag** part 10-0 to be the log **information** collecting state instructing means in a register 10 formed in the adaptor 4. When the read result is '1', instruction processing to devices other than the adaptor 4 is continued as it is. At the time of detecting the fault in the adaptor 4, a service processor 3 collects log information from the adaptor 4 without stopping other devices, stores the collected log information in a **memory** 6. After ending the collection, the **flag** part 10-0 is turned to '0'. The CPU 1 decides the '0' and executes the clearing processing of the adaptor 4 to return the adaptor 4 to the initial state and restart it. Since the operation of devices unrelated to the adaptor 4 is not stopped even if the adaptor 4 generates an error, the real time property of the system can be guaranteed.

9/5/22 (Item 22 from file: 347)

DIALOG(R) File 347:JAPIO

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03182449 **Image available**

ELECTRONIC FILE CONTROL SYSTEM

PUB. NO.: 02-157949 [JP 2157949 A]

PUBLISHED: June 18, 1990 (19900618)

INVENTOR(s): KOU DA JUN

APPLICANT(s): CASIO COMPUT CO LTD [350750] (A Japanese Company or Corporation), JP (Japan)

APPL. NO.: 63-311719 [JP 88311719]

FILED: December 09, 1988 (19881209)

INTL CLASS: [5] G06F-012/00 ; G06F-012/14

JAPIO CLASS: 45.2 (INFORMATION PROCESSING -- Memory Units)

JOURNAL: Section: P, Section No. 1101, Vol. 14, No. 409, Pg. 62, September 05, 1990 (19900905)

ABSTRACT

PURPOSE: To **prohibit** the registration and **deletion**, etc., of respective terminals which are connected to a server, by providing an allowance flag to access an electronic file for the unit of the terminal in the server side, judging the flag when a processing request is executed, accessing the file and limiting the access of the electronic file from the terminal.

CONSTITUTION: When the processing request is added from the terminal, which is connected to a network system, to the electronic file of the server, a determining means 2 reads **information** (the allowance **flag**, for example) to correspond to the terminal, which generates the request, from a (retrieval, move, **deletion**, etc.,) **information** table 1 in correspondence to the type of processing. Then, in the case of the information to allow the processing, the execution of the processing is determined. When this determination is executed, the processing is executed to the electronic file. Thus, since the execution of the processing request is limited by the terminal in correspondence to the type of the processing, the terminal can be **prevented** from arbitrarily execute **deletion**, etc., for example.

9/5/23 (Item 23 from file: 347)

DIALOG(R) File 347:JAPIO

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0141- **Image available**
FILE PROTECTING SYSTEM OF RAM

PUB. NO.: 60-075948 [JP 60075948 A]
PUBLISHED: April 30, 1985 (19850430)
INVENTOR(s): HOKIMOTO TAKEHIRO
APPLICANT(s): NEC CORP [000423] (A Japanese Company or Corporation), JP
(Japan)
APPL. NO.: 58-184752 [JP 83184752]
FILED: October 03, 1983 (19831003)
INTL CLASS: [4] G06F-012/14
JAPIO CLASS: 45.2 (INFORMATION PROCESSING -- Memory Units)
JOURNAL: Section: P, Section No. 385, Vol. 09, No. 217, Pg. 6,
September 04, 1985 (19850904)

ABSTRACT

PURPOSE: To **prevent** the erroneous **erasure** of an RAM **data** and at the same time to attain the effective use of an area where no **RAM** is used by adding a **flag** register for inhibition of write to each word line of the RAM.

CONSTITUTION: The address input 1 of the RAM1 is decoded by a decoder 2. As S-R flip-flop 8 is set by an AND5 of a word signal line 3 and a write signal line 4 and then reset by the AND7 between the line 3 and a read signal line 6. The reverse output of the flip-flop 8 serves the word line 11 of the RAM10 with the AND9 to the line 3. In such constitution, the data once written is kept under a write inhibition state unless it is read out. The relevant word is put under a write inhibition state by writing the same data even though the data is read out

9/5/24 (Item 24 from file: 347)
DIALOG(R)File 347:JAPIO
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01452060 **Image available**
FILE PROTECTING SYSTEM

PUB. NO.: 59-163660 [JP 59163660 A]
PUBLISHED: September 14, 1984 (19840914)
INVENTOR(s): KANEKO TSUTOMU
URATA TAKASHI
APPLICANT(s): HITACHI LTD [000510] (A Japanese Company or Corporation), JP
(Japan)
APPL. NO.: 58-037353 [JP 8337353]
FILED: March 09, 1983 (19830309)
INTL CLASS: [3] G06F-013/00 ; G11B-023/28; G11C-029/00
JAPIO CLASS: 45.2 (INFORMATION PROCESSING -- Memory Units); 42.5
(ELECTRONICS -- Equipment)
JOURNAL: Section: P, Section No. 329, Vol. 09, No. 16, Pg. 112,
January 23, 1985 (19850123)

ABSTRACT

PURPOSE: To **protect** automatically the contents filed temporarily by recording automatically the **protection** designating **information** to a **protection mark** region when the writing is controlled to the file and **erasing** said designating **information** after all contents of the file are read out.

CONSTITUTION: The data obtained via a circuit 2, etc. are stored in a file device 3 by a processor 1 of a file **protection** system. Then the **data** of the device 3 are read out by the processor 1 and delivered to a printer 6 via an output control part 5. The device 3 is roughly divided into an index part 11 and a data region 12. The region 12 contains plural gatherings, and the part 11 controls the attributes of plural files 13. When the writing is controlled to the file 13, the **protection** designating **information** is automatically recorded to a **protection** region 18 of the part 11. This designating **information** is **erased** after all contents of the files 13 are read out. Thus the **contents** stored temporarily in the file 13 are

protected automatically.

9/5/25 (Item 1 from file: 350)
DIALOG(R)File 350:Derwent WPIX
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015814516 **Image available**
WPI Acc No: 2003-876720/200381
XRPX Acc No: N03-700235

Garbage collection method for Java virtual machine, involves triggering several processes to mark objects that are currently used, and releasing unmarked objects to object pool after completion of marking process

Patent Assignee: INT BUSINESS MACHINES CORP (IBMC)

Inventor: BORMAN S D; TROTTER M J

Number of Countries: 001 Number of Patents: 001

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
US 20030220952	A1	20031127	US 2002324548	A	20021220	200381 B

Priority Applications (No Type Date): US 2002324548 A 20021220

Patent Details:

Patent No	Kind	Lan Pg	Main IPC	Filing Notes
US 20030220952	A1		9 G06F-017/30	

Abstract (Basic): US 20030220952 A1

NOVELTY - The method involves determining whether the contents of system heap (160) that stores objects which are shared among different processes, reaches preset threshold. The status field of particular process is set to mark indicator value and the remaining processes are triggered to mark the objects that are currently used. The unmarked objects are released to object pool after determining completion of marking process.

DETAILED DESCRIPTION - An INDEPENDENT CLAIM is also included for garbage collection system.

USE - For garbage collection in Java virtual machine (JVM) used for executing Java programming language to perform diverse tasks including locating information, online ordering and buying of goods and managing finances, in world wide web. Also applicable for other programming environments including C, C++, Smalltalk, Eiffel, Dylan, Modula-3 and Oberon.

ADVANTAGE - Eliminates the need for stopping execution of all the processes running on the same data processing system, during the garbage collection process.

DESCRIPTION OF DRAWING(S) - The figure shows a flowchart illustrating the garbage collection process.

pp; 9 DwgNo 4/4

Title Terms: GARBAGE; COLLECT; METHOD; VIRTUAL; MACHINE; TRIGGER; PROCESS; MARK; OBJECT; CURRENT; RELEASE; UNMARKED; OBJECT; OBJECT; POOL; AFTER; COMPLETE; MARK; PROCESS

Derwent Class: T01

International Patent Class (Main): G06F-017/30

File Segment: EPI

9/5/26 (Item 2 from file: 350)
DIALOG(R)File 350:Derwent WPIX
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015554517 **Image available**
WPI Acc No: 2003-616672/200358
Related WPI Acc No: 2000-686691; 2003-876740; 2003-901743; 2004-042001;
2004-042004; 2004-060694
XRPX Acc No: N03-491085

Write barrier maintenance method in computer system, involves updating data structure associated with write barrier according to assignment operation

Patent Assignee: BENSON P (BENS-I); SEXTON H (SEXT-I); UNIETIS D (UNIE-I)

Inventor: BENSON P; SEXTON H; UNIETIS D

Number of Countries: 001 Number of Patents: 001

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
US 20030105772	A1	20030605	US 99248295	A	19990211	200358 B
			US 2002102844	A	20020322	
			US 2002378391	P	20020508	
			US 2003339707	A	20030109	

Priority Applications (No Type Date): US 2002378391 P 20020508; US 99248295 A 19990211; US 2002102844 A 20020322; US 2003339707 A 20030109

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 20030105772	A1		14	G06F-007/00	Div ex application US 99248295 CIP of application US 2002102844 Provisional application US 2002378391 Div ex patent US 6457019

Abstract (Basic): US 20030105772 A1

NOVELTY - The source and target **tags** obtained respectively from the source and target **objects** are compared. If the source **tag** is in predetermined numerical relation with the target **tag**, a **data** structure associated with the write **barrier** is updated according to the assignment operation.

DETAILED DESCRIPTION - An INDEPENDENT CLAIM is also included for computer readable medium storing write barrier maintenance program.

USE - For maintaining write **barrier** during assignment operation between source and target **objects** in dynamic run-time execution environment of computer system used in multi-user environment.

ADVANTAGE - The updating of the data structure provides efficient management of memory and improved performance of **garbage collection** by determining whether the source object belongs to a memory space that contains objects of more recent lifetime than objects contained in a memory space to which the target object belongs.

9/5/33 (Item 9 from file: 350)
DIALOG(R) File 350:Derwent WPIX
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014168739 **Image available**
WPI Acc No: 2001-652967/200175
XRPX Acc No: N01-488410

Data erasure method in application software, involves setting execution limits, when scanning of function record area is interrupted and cancels the limits, when execution of function is completed

Patent Assignee: ~~KANSAS CITY~~ KK (KANS-N)
Number of Countries: 001 Number of Patents: 001
Patent Family:
Patent No Kind Date Applicat No Kind Date Week
JP 2001273189 A ~~20011005~~ JP 200082955 A 20000323 200175 B

Priority Applications (No Type Date): JP 200082955 A 20000323

Patent Details:
Patent No Kind Lan Pg Main IPC Filing Notes
JP 2001273189 A 10 G06F-012/00

Abstract (Basic): JP 2001273189 A

NOVELTY - A function record area of a memory is scanned, when a main program is interrupted. A reservation marking is performed while scanning, to protect the data currently recorded by the record area. When the scanning is interrupted, the main program is executed again based on set conditions. The execution limit is canceled, when the execution of a function is completed to set priority to unscanned portion.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for the following:

- (a) Data erasure device;
- (b) Recording medium storing the program for erasing unnecessary data

USE - For erasing unnecessary data produced by application software in programming languages such as Prolog, Java, C++, Lisp.

ADVANTAGE - Erases unnecessary data without damaging the real time effectiveness of the main program. Prevents the miscatch of reservation marking produced by the variation of a pointer and hence avoids the erasure of required data.

DESCRIPTION OF DRAWING(S) - The figure shows an explanatory diagram for data erasure process. (Drawing includes non-English language text).

pp; 10 DwgNo 2/9

Title Terms: DATA; ERASE; METHOD; APPLY; SOFTWARE; SET; EXECUTE; LIMIT;
SCAN; FUNCTION; RECORD; AREA; INTERRUPT; CANCEL; LIMIT; EXECUTE; FUNCTION
; COMPLETE

Derwent Class: T01

International Patent Class (Main): G06F-012/00

International Patent Class (Additional): G06F-009/44

File Segment: EPI

9/5/47 (Item 23 from file: 350)
DIALOG(R)File 350:Derwent WPIX
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008945119 **Image available**

WPI Acc No: 1992-072388/199209

XRFX Acc No: N92-054379

Real time, concurrent garbage collection for computer storage space -
uses, virtual memory page protection mechanisms to collect used
storage space in heap, divided into old and new space portions

Patent Assignee: NIPPON DIGITAL EQUIP KK (DIGI)

Inventor: APPEL A; ELLIS J R; KAI L

Number of Countries: 001 Number of Patents: 001

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
US 5088036	A	19920211	US 89297845	A	19890117	199209 B

Priority Applications (No Type Date): US 89297845 A 19890117

Abstract (Basic): US 5088036 A

The real-time concurrent garbage collection system uses the
virtual-memory page protection mechanisms of a standard computer
system to collect used storage space in a heap. The heap is divided
into old-space and new-space portions, each of which is further divided
into a multiplicity of pages. At least one mutator thread modifies and
adds objects to new-space.

Two garbage collection threads are used, a fault processing
thread, and a concurrent scanning thread, both of which help to collect
the accessible objects in old-space. garbage collector initially
copies only the root objects, or a portion of the root objects, to
new-space. In addition, all pages of new-space which contain copies of
old-space objects are initially marked as being protected.
Whenever the mutator tries to access an object in a protected page,
a page-access trap is generated. The fault processing thread of the
garbage collector responds to the trap by scanning the objects in
the referenced page, copying old-space objects and forwarding pointers
as necessary. It unprotects the page and resumes the mutator at the
faulting instruction. (16pp Dwg.No.3A/7)

Title Terms: REAL; TIME; CONCURRENT; GARBAGE; COLLECT; COMPUTER; STORAGE;
SPACE; VIRTUAL; MEMORY; PAGE; PROTECT; MECHANISM; COLLECT; STORAGE; SPACE
; HEAP; DIVIDE; NEW; SPACE; PORTION

Derwent Class: T01

International Patent Class (Additional): G06F-012/00

File Segment: EPI

9/5/48 (Item 24 from file: 350)

DIALOG(R)File 350:Derwent WPIX

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008757316 **Image available**

WPI Acc No: 1991-261329/199136

XRFX Acc No: N91-199364

Programmable controller having automatic control of interlock process -
includes master station which uses data processing module having
operation processors for cyclically executing sequence program

Patent Assignee: MITSUBISHI DENKI KK (MITQ)

Inventor: MORITA H; YAMAGUCHI T

Number of Countries: 004 Number of Patents: 005

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
EP 444535	A	19910904	EP 91102560	A	19910221	199136 B
EP 444535	A3	19940629	EP 91102560	A	19910221	199527
US 5437048	A	19950725	US 91654991	A	19910214	199535
			US 9326244	A	19930301	
			US 94283147	A	19940801	
EP 444535	B1	19971112	EP 91102560	A	19910221	199750
DE 69128159	E	19971218	DE 628159	A	19910221	199805

Priority Applications (No Type Date): JP 9046540 A 19900227

Cited Patents: NoSR.Pub; 2.Jnl.Ref; DE 3242631; EP 187677; JP 1118902; JP 60114908; US 4888726

Patent Details:

Patent No Kind Lan Pg Main IPC Filing Notes

EP 444535 A 16

Designated States (Regional): DE FR SE

US 5437048 A 11 G06F-015/46 Cont of application US 91654991

Cont of application US 9326244

EP 444535 B1 E 18 G06F-013/12

Designated States (Regional): DE FR SE

DE 69128159 E G06F-013/12 Based on patent EP 444535

Abstract (Basic): EP 444535 A

The method comprises the execution of the data link instruction (202) in order to transfer data between the particular slave station (3A) and the master station (1). It involves recording (S304) the **address information** of the operation complete **flag memory** (6f) specified in the sequence program into the operation complete **flag address memory** (9b) corresponding to the particular slave station (3A). The communication information is entered into the communication entry memory (9a) corresp. to the particular slave station (3A), prior to the execution of the data link instruction (202).

A **flag** is set at a corresponding **address** in the operation complete **flag memory** (6f) in accordance with **address information** recorded in the operation complete **flag address memory** (9b) on completion of the operation specified by the **data link instruction** (202). The **flag** of the operation complete **flag memory** (6f) is reset and the communication **information** entered in the communication entry memory (9a) after execution of at least one cycle of the sequence program is erased.

ADVANTAGE - Easy program creation and maintenance.

Dwg.1/10

Title Terms: PROGRAM; CONTROL; AUTOMATIC; CONTROL; INTERLOCKING; PROCESS; MASTER; STATION; DATA; PROCESS; MODULE; OPERATE; PROCESSOR; CYCLIC; EXECUTE; SEQUENCE; PROGRAM

Derwent Class: T01; T06

International Patent Class (Main): G06F-013/12 ; G06F-015/46

International Patent Class (Additional): G05B-019/05; G06F-013/366

File Segment: EPI

9/5/49 (Item 25 from file: 350)

DIALOG(R) File 350:Derwent WPIX

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09426671 **Image available**

WPI Acc No: 1991-030755/199105

XRPX Acc No: N91-023810

Control appts. for car telephone set - supplies signal to control storing information into dial memories to protect important information from being erroneously erased

Patent Assignee: NEC CORP (NIDE)

Inventor: KOMA N

Number of Countries: 010 Number of Patents: 010

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
EP 410344	A	19910130	EP 90114072	A	19900723	199105 B
AU 9059746	A	19910131				199112
CA 2021797	A	19910125				199116
JP 3054947	A	19910308	JP 89188806	A	19890724	199116
EP 410344	A3	19920819	EP 90114072	A	19900723	199337
US 5247572	A	19930921	US 90556511	A	19900724	199339
			US 92963509	A	19921020	
AU 645019	B	19940106	AU 9059746	A	19900724	199408
CA 2021797	C	19941108	CA 2021797	A	19900723	199445

EP 410344	B1	19971008	EP 90114072	A	19900723	199745
DE 69031555	E	19971113	DE 631555	A	19900723	199751
			EP 90114072	A	19900723	

Priority Applications (No Type Date): JP 89188806 A 19890724

Other Patents: NoSR.Pub; 3.Jnl.Ref; DE 3410569; DE 3410579; DE 3522107; JP 1090654; JP 1101052; JP 59225696; US 4243845; JP 1090654; JP 1101052

Patent Details:

Patent No	Kind	Lan	Pg	Main	IPC	Filing	Notes
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EP 410344	A						
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Designated States (Regional): DE FR GB IT NL SE

US 5247572	A		8	H04M-011/00	Cont of application	US 90556511
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AU 645019	B			H04M-001/274	Previous Publ. patent	AU 9059746
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EP 410344	B1 E	11		H04M-001/274		
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Designated States (Regional): DE FR GB IT NL SE

DE 69031555	E			H04M-001/274	Based on patent	EP 410344
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DE 6021797	C			H04M-001/27		
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Abstract (Basic): EP 410344 A

The apparatus comprises dial memories each having a memory number. A predetermined control signal supplied from a generating unit is received to produce a received predetermined control signal. The memory number designating a memory selected from the dial memories is input as information to be stored. Storing the information into the selected memory is controlled.

The selected memory is controlled so that information stored in the selected memory is erasable in the presence of the predetermined control signal thus storing the information supplied from the input device. The information stored in the selected memory is **forbidden** from **erasing** in the absence of the predetermined control signal, thus forbidding writing of the information supplied from the input device.

ADVANTAGE - Important **information** is not **erased**, even if key is erroneously pressed on. (10pp Dwg.No.3/4)

File Terms: CONTROL; APPARATUS; CAR; TELEPHONE; SET; SUPPLY; SIGNAL; CONTROL; STORAGE; INFORMATION; DIAL; MEMORY; PROTECT; IMPORTANT; INFORMATION; ERROR; ERASE

Derwent Class: T01; W01

International Patent Class (Main): H04M-001/27; H04M-001/274; H04M-011/00

International Patent Class (Additional): G06F-012/16

File Segment: EPI

9/5/50 (Item 26 from file: 350)

DIALOG(R)File 350:Derwent WPIX

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007822187

WPI Acc No: 1989-087299/198912

XRPX Acc No: N89-066594

Electronic blackboard system with magnetism generator - processes written, erased, and designated information as electric signals on writing surface using marker, eraser, and designating rod

Patent Assignee: WACOM CO LTD (WACO-N)

Inventor: INASHIMA S; MIZUNO H; MURAKAMI A; SENDA T; TOMOFUJI Y; YAMANAMI T; MURAKAMI Z

Number of Countries: 007 Number of Patents: 006

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
EP 307893	A	19890322	EP 88115036	A	19880914	198912 B
US 55300	A	19890927				199030
US 5134388	A	19920728	US 88244273	A	19880914	199233
			US 90604540	A	19901029	
			US 91690317	A	19910425	
EP 307893	B1	19950308	EP 88115036	A	19880914	199514
DE 3853241	G	19950413	DE 3853241	A	19880914	199520
			EP 88115036	A	19880914	
KR 9601649	B1	19960203	KR 8811843	A	19880914	199908

Priority Applications (No Type Date): JP 87284377 A 19871112; JP 87230683 A 19870914

Cited Patents: 3.Jnl.Ref; A3...9013; EP 229637; JP 63049921; JP 63056716; JP 63066627; No-SR.Pub; DE 2909847

Patent Details:

Patent No Kind Lan Pg Main IPC Filing Notes

EP 307893 A E 30

Designated States (Regional): DE FR GB IT

US 5134388 A 27 G09G-005/08 Cont of application US 88244273

Cont of application US 90604540

EP 307893 B1 E 31 G06K-011/14

Designated States (Regional): DE FR GB IT

DE 3853241 G G06K-011/14 Based on patent EP 307893

KR 9601649 B1 G06K-011/06

Abstract (Basic): EP 307893 A

The electronic blackboard system has an antenna coil provided such as to surround a periphery of the writing surface of the blackboard body. Tuning circuits are respectively provided in the marker and eraser, the tuning circuits including at least a coil and a capacitor. The circuits are arranged such that a predetermined frequency or predetermined other frequencies are set as tuning frequencies.

A writing instrument discrimination circuit is arranged such that, when radiowaves are transmitted as an AC signal of the one frequency or the other frequencies is consecutively and intermittently applied to the antenna coil and when the transmission of the radiowaves is stopped, the radiowaves reflected by the tuning circuit of the marker or the eraser is received by the antenna coil. The writing instrument discrimination circuit discriminates the marker or the eraser which is being used.

ADVANTAGE - Does not require cord or battery, efficient.

.No.1/17

Title Terms: ELECTRONIC; BLACKBOARD; SYSTEM; MAGNETISE; GENERATOR; PROCESS; WRITING; ERASE; DESIGNATED; INFORMATION; ELECTRIC; SIGNAL; WRITING; SURFACE; MARK; ERASE; DESIGNATED; ROD

Derwent Class: P85; T04; W04

International Patent Class (Main): G06K-011/06; G06K-011/14; G09G-005/08

International Patent Class (Additional): G06F-003/03 ; G06F-003/033 ;

G06K-011/16

File Segment: EPI; EngPI

9/5/51 (Item 27 from file: 350)

DIALOG(R)File 350:Derwent WPIX

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007389172 **Image available**

WPI Acc No: 1988-023107/198804

XRPX Acc No: N88-017515

Document processing appts. with maintained format capability - has tab function allowing margin indent to be visually displayed and maintains format even when overwritten

Assignee: BROTHER KOGYO KK (BRER); BROTHER IND CO LTD (BRER)
Inventor: BAN T I; FURUSHIMA T; HIRATA K; IKEDA Y; MIURA T; MORIMOTO Y; BAN

Number of Countries: 005 Number of Patents: 004

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
EP 254480	A	19880127	EP 87306271	A	19870715	198804 B
US 4839827	A	19890613	US 8773015	A	19870714	198930
EP 254480	B1	19920930	EP 87306271	A	19870715	199240
DE 3781971	G	19921105	DE 3781971	A	19870715	199246
			EP 87306271	A	19870715	

Priority Applications (No Type Date): JP 86167098 A 19860715

Cited Patents: A3...8924; EP 75743; FR 2324057; JP 60110032; No-SR.Pub; US 4118695; US 4607966

Patent Details:

Patent No	Kind	Lan	Pg	Main	IPC	Filing	Notes
EP 254480	A	E	13				
Designated States (Regional): DE FR GB IT							
US 4839827	A		12				
EP 254480	B1	E	13	G06F-015/20			
Designated States (Regional): DE FR GB IT							
DE 3781971	G			G06F-015/20		Based on patent EP 254480	

Abstract (Basic): DE 3781971 G

The processing appts. has character symbol keys for inputting data of characters and/or symbols. An erase key inputs an erase signal for the input data and a visual display device shows the input data from the keyboard. A buffer stores the input data and a shift device displaces the top position of the input data on the display towards the end of the line. A control code **mark** is displayed in the line where the **data** exists, denoting the top position renewed by the shift device. A shift inhibit device displays a character or symbol instead of the control code mark when the symbol is input to the display position of the control code mark. A shift permit device displaces the top position after erasure of the control code mark. ADVANTAGE - De-formatting prevented and document processing efficiency improved.

EP 254480 A

The processing appts. has character symbol keys for inputting data of characters and/or symbols. An erase key inputs an erase signal for the input data and a visual display device shows the input data from the keyboard. A buffer stores the input data and a shift device displaces the top position of the input data on the display towards the end of the line. A control code **mark** is displayed in the line where the **data** exists, denoting the top position renewed by the shift device.

A shift inhibit device displays a character or symbol instead of the control code mark when the symbol is input to the display position of the control code mark. A shift permit device displaces the top position after erasure of the control code mark.

ADVANTAGE - De-formatting prevented and document processing efficiency improved.

1/11

Title Terms: DOCUMENT; PROCESS; APPARATUS; MAINTAIN; FORMAT; CAPABLE; TAB; FUNCTION; ALLOW; MARGIN; INDENT; VISUAL; DISPLAY; MAINTAIN; FORMAT; EVEN

Derwent Class: T01

International Patent Class (Main): G06F-015/20

International Patent Class (Additional): G06F-003/14

File Segment: EPI

9/5/52 (Item 28 from file: 350)

INDEX(R)File 350:Derwent WPTX

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4235237

WPI Acc No: 1980-E1679C/198019

Validity checking and changing system - is for instruction tags amongst data in computer system and prevents them and data being inadvertently deleted or changed

Patent Assignee: IBM CORP (IBMC)

Inventor: JONES E R; KEMPKE W G; MITCHELL G R

Number of Countries: 005 Number of Patents: 005

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
EP 10186	A	19800430				198019 B
US 4241396	A	19801222				198102
EP 10186	B	19820120				198204
EP 10186	G	19820304				198210
EP 10186	B	19870422				198935

Priority Applications (No Type Date): US 78953666 A 19781023

Cited Patents: US 3611310; 3.Jnl.Ref

Patent Details:

Patent No Kind Lan Pg Main IPC Filing Notes

EP 10186 A G

Designated States (Regional): DE FR GB

EP 10186 B G

Designated States (Regional): DE FR GB

Abstract (Basic): EP 10186 A

Each instruction **tag** (11) is assigned identification **bits** (12). Instructions that initiate the use of a pointer cause the identification bits to be processed by a device that checks whether the use of that particular tag is admissible. Preventing the inadmissible use of tags stored in main storage is esp. important when several programs are held in main storage. These programs are able to change both pointers and data.

The main storage area (10) is divided into addressable zones (11) each of which is assigned an identification bit position (12). Each addressable zone contains one data word. A data storage register (16) is connected to the main storage area and stores data that has been read or is about to be stored, including the identification bits

10/5/12 (Item 1 from file: 350)
DIALOG(R)File 350:Derwent WPIX
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015766049 **Image available**
WPI Acc No: 2003-828251/200377
XRPX Acc No: N03-661584

Cache entry flushes tracking method for data processing systems,
involves using memory cell as valid flag to signify when entry is
still in cache and changing flag based on signals transmitted from
non-coherent memory domain

Patent Assignee: HEWLETT-PACKARD DEV CO LP (HEWP)
Inventor: SWANSON J C; WICKERAAD J A
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
US 6591332	B1	20030708	US 2000561332	A	20000428	200377 B

Priority Applications (No Type Date): US 2000561332 A 20000428

Index Details:

Patent No	Kind	Lang	Pg	Main IPC	Filing Notes
US 6591332	B1		14	G06F-012/00	

Abstract (Basic): US 6591332 B1

NOVELTY - The method involves storing an address corresponding to a cache entry in multiple memories e.g. cache entry address first-in-first-out (CEA) FIFO. A memory cell is used as a valid flag to indicate when a cache entry is still in the cache. The valid flag is then changed based on one or more signals transmitted from a non-coherent memory domain.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for the following:

(a) a data processing system, having a cache and a cache entry, serving data transfers between a coherent memory domain and a non-coherent memory domain in the system

(b) an I/O bridge host to transfer data between an I/O device and a data processing system.

USE - Used for tracking flushes of cache entries in data processing systems e.g. computer systems, programmable electronic systems, telecommunication switching systems and control systems.

ADVANTAGE - The method prevents the flushing of a re-allocated cache entry by keeping track of the flush status of the cache entry using the CEA FIFO and maintains the order of the cache entries for the input/output (I/O) responses, thus preventing performance degradation caused by additional flush and re-request transactions for the cache.

DESCRIPTION OF DRAWING(S) - The drawing shows a flow chart of a method for using a modified CEA FIFO with a CAM in an I/O bridge host.

pp; 14 DwgNo 7/9

Title Terms: CACHE; ENTER; FLUSH; TRACK; METHOD; DATA; PROCESS; SYSTEM; MEMORY; CELL; VALID; FLAG; SIGNIFY; ENTER; STILL; CACHE; CHANGE; FLAG; BASED; SIGNAL; TRANSMIT; NON; COHERE; MEMORY; DOMAIN

Derwent Class: T01

International Patent Class (Main): G06F-012/00

File Segment: EPI

10/5/17 (Item 6 from file: 350)
DIALOG(R)File 350:Derwent WPIX
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011576033 **Image available**
WPI Acc No: 1997-552514/199751
XRPX Acc No: N97-460384

Deletion method for removing objects in multi threaded system -
involves marking object to be deleted, rejecting new invocation
calls and returning errors on further deletion calls

Patent Assignee: SUN MICROSYSTEMS INC (SUNM)

Inventor: CALLSEN C J

Number of Countries: 007 Number of Patents: 005

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
EP 807884	A1	19971119	EP 97303011	A	19970501	199751 B
JP 10049384	A	19980220	JP 97128409	A	19970519	199818
US 6247039	B1	20010612	US 96650314	A	19960517	200135
EP 807884	B1	20030326	EP 97303011	A	19970501	200323
DE 69720100	E	20030430	DE 620100	A	19970501	200336
			EP 97303011	A	19970501	

Priority Applications (No Type Date): US 96650314 A 19960517

Cited Patents: EP 514112; US 4809168

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
EP 807884	A1	E	15	G06F-009/46	
Designated States (Regional): DE FR GB NL SE					
JP 10049384	A		16	G06F-009/46	
US 6247039	B1			G06F-009/00	
EP 807884	B1	E		G06F-009/46	
Designated States (Regional): DE FR GB NL SE					
DE 69720100	E			G06F-009/46	Based on patent EP 807884

Abstract (Basic): EP 807884 A

The deletion method involves maintaining an object based system within a multi-threaded operating system. When an object is initially invoked an instance of it is created and it's invocation counter incremented. Further invocations of the object cause its counter to be further incremented. While the counter is non-zero the object is in use and cannot be disposed off.

When a delete instruction is applied a state machine associated with the object is moved to a new state and the counter is decremented. If the counter is zero the object is removed. A further invocation call is rejected and another deletion call is returned with an error.

ADVANTAGE - Provides consistent handling of **object deletion** by **preventing** new invocations and multiple **deletions**.

Dwg.7/7

Title Terms: DELETE; METHOD; REMOVE; OBJECT; MULTI; THREAD; SYSTEM; MARK; OBJECT; DELETE; REJECT; NEW; CALL; RETURN; ERROR; DELETE; CALL

Derwent Class: T01

International Patent Class (Main): G06F-009/00 ; G06F-009/46

International Patent Class (Additional): G06F-009/44

File Segment: EPI

10/5/22 (Item 11 from file: 350)

DIALOG(R)File 350:Derwent WPIX

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010104907 **Image available**

WPI Acc No: 1995-006160/199501

XRFX Acc No: N95-005112

Cache controller tag RAM directory for tag initialisation - has tag controller tag RAM configured in right and left ways each including stored tag addresses , valid bits and write protect bit with LRU pointers to indicate right or left way

Assignee: INTEL CORP (ITLC)

Inventor: IYENGAR S R; NADIR J

Number of Countries: 001 Number of Patents: 001

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
US 5367659	A	19941122	US 91767700	A	19910930	199501 B
			US 94216082	A	19940321	

Priority Applications (No Type Date): US 91767700 A 19910930; US 94216082 A 19940321

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
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Abstract (Basic): US 5367659 A

The cache controller **tag ram** is configured into a two ways, each including **tag** and valid- **bit** storage for associatively searching the directory for cache data-array addresses. The two ways, a right way and a left way, each store **tag addresses**. A first unit is provided for asserting a flush signal upon the condition that a warm start reset is recognized or a power up condition is recognized. Logic causes all pending write requests to be withdrawn in response to the flush signal.

The directory is cleared by setting all valid, write **protect** and least recently used (LRU) **bits** to zero in both of the ways. Subsequent write requests use a line fill algorithm to ensure that correct data is written into the directory by choosing which way to select for a line fill after the **bits** have been **cleared**.

USE/ADVANTAGE - Tag initialisation in controller for two-way set associative cache, for power on and reset initialisation of **TAG RAM** in controller for **data** cache.

Dwg.1/5

Title Terms: CACHE; CONTROL; TAG; RAM; DIRECTORY; TAG; INITIALISE; TAG; CONTROL; TAG; RAM; CONFIGURATION; RIGHT; LEFT; WAY; STORAGE; TAG; ADDRESS ; VALID; BIT; WRITING; PROTECT; BIT; LRU; POINT; INDICATE; RIGHT; LEFT; WAY

IPC Class: T01

International Patent Class (Main): G06F-013/00

International Patent Class (Additional): G06F-012/04 ; G06F-012/06

File Segment: EPI

File 348:EUROPEAN PATENTS 1978-2004/Mar W02

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File 349:PCT FULLTEXT 1979-2002/UB=20040318,UT=20040311

(c) 2004 WIPO/Univentio

Set	Items	Description
S1	1374	GARBAGE(2N)COLLECT? OR AUTOMAT?(2N)MEMOR??? (2N)MANAG? OR R- ECYCL??? (3N) (MEMORY OR RAM)
S2	66068	(DELET? OR ERAS??? OR PURG??? OR CLEAN??? OR CLEAR??? OR F- LUSH??? OR WIP??? OR ELIMINAT?) (3N) (DATA OR INFORMATION OR OB- JECT? ? OR CONTENT? ? OR ITEM? ? OR MEMORY OR MEMORIES OR RAM OR BIT? ? OR BYTE? ?)
S3	50652	(RESTRICT? OR PROHIBIT? OR STOP???? OR PREVENT? OR IMPED? - OR SUPPRESS? OR DETER? ? OR DETERRING OR BAR? ? OR BARRED OR B- ARRING OR FORBID?) (7N) (DELET? OR ERAS??? OR PURG??? OR CLEAN?- ?? OR CLEAR??? OR FLUSH? OR WIP??? OR ELIMINAT?)
S4	46323	(PROTECT? OR SAFEGUARD??? OR GUARD??? OR SHIELD??? OR BARR- IER OR DEFEND? OR DEFENSE) (7N) (DATA OR INFORMATION OR OBJECT? ? OR CONTENT? ? OR ITEM? ? OR MEMORY OR MEMORIES OR RAM OR BI- T? ? OR BYTE? ?)
S5	87093	(MARK???? OR MARKER? ? OR FLAG? ? OR FLAGGING OR TAG? ? OR TAGGING OR LABEL?) (7N) (DATA OR INFORMATION OR OBJECT? ? OR CO- NTENT? ? OR ITEM? ? OR ENTRY OR ENTRIES OR MEMOR??? OR RAM OR BIT? ? OR BYTE? ? OR ADDRESS?? OR POINTER??)
S6	299410	STACK? ? OR QUEUE? ? OR FIFO OR ((FIRST OR LAST) () IN) (1N) (- (FIRST OR LAST) () OUT) OR BUFFER? ? OR CACHE? ?
S7	399	S1:S2(50N)S3:S4(50N)S5
S8	182	S7 AND IC=G06F
S9	108	S1:S2(50N)S3:S4(50N)S5(5N)S6
S10	65	S9 AND IC=G06F
S11	16	S1(50N)S3:S4(50N)S5
S12	23442	(DELET? OR ERAS??? (3N) (DATA OR INFORMATION OR OBJECT? ? OR CONTENT? ? OR ITEM? ? OR MEMORY OR MEMORIES OR RAM OR BIT? ? OR BYTE? ?)
S13	1321	S3:S4(10N)S5
S14	90	S12(50N)S13
S15	35	S14 AND IC=G06F
S16	33	S15 NOT S11

11/3,K/1 (Item 1 from file: 348)
DIALOG(R)File 348:EUROPEAN PATENTS
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01422992

Topological, on-the-fly classification of objects into a global set and local sets

Sofortige topologische Klassifizierung von Objekten nach einem globalen Satz und einem lokalen Satz

Classification topologique a la volee des objets vers un ensemble global et un ensemble local

PATENT ASSIGNEE:

UNIVERSITEIT GENT, (1537370), Sint-Pietersnieuwstraat 25, 9000 Gent, (BE)
, (Applicant designated States: all)

INVENTOR:

Christiaens, Mark, Ter Weibroek 55, B-9880 Aalter, (BE)

LEGAL REPRESENTATIVE:

Bird, William Edward et al (62355), Bird Goen & Co., Vilvoordsebaan 92,
3020 Winksele, (BE)

PATENT (CC, No, Kind, Date): EP 1202172 A1 020502 (Basic)

APPLICATION (CC, No, Date): EP 2000870257 001031;

DESIGNATED STATES: BE

EXTENDED DESIGNATED STATES: AL; LT; LV; MK; RO; SI

INTERNATIONAL PATENT CLASS: G06F-009/46

ABSTRACT WORD COUNT: 92

NOTE:

Figure number on first page: 5

LANGUAGE (Publication,Procedural,Application): English; English; English

FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	200218	1115
SPEC A	(English)	200218	14184
Total word count - document A			15299
Total word count - document B			0
Total word count - documents A + B			15299

...SPECIFICATION they are not referenced anymore.

- If the thread is unable to reclaim enough memory on its own, then a full **garbage collection** is started.

The advantage of this approach is that, usually, a thread is able to clean up a large amount of data and allocate new memory without the intervention of other threads. A full **garbage collection** is then not required. This is a good thing, because a full **garbage collection** is a very disruptive process. To do a fast, full **garbage collection**, usually all the threads are **stopped** since it is very hard to **clean up** data that is still being manipulated by other threads.

11/3,K/2 (Item 2 from file: 348)
DIALOG(R)File 348:EUROPEAN PATENTS
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01200073

MEMORY MANAGEMENT WITHIN A RUN-TIME ENVIRONMENT

SPEICHERVERWALTUNG IN EINER LAUFZEITUMGEBUNG

GESTION DE LA MEMOIRE DANS UN SYSTEME ESSENTIEL

PATENT ASSIGNEE:

ORACLE CORPORATION, (1640220), 500 Oracle Parkway, Redwood Shores, CA
94065, (US), (Proprietor designated states: all)

INVENTOR:

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BENSON, Peter, 1115 Burr Trail Road, Boulder, UT 84716, (US)

LEGAL REPRESENTATIVE:

Hofmann, Harald (157101), Sonnenberg Fortmann, Patent- und Rechtsanwälte,
Herzogspitalstrasse 10a, 80331 Munchen, (DE)

PATENT (CC, No, Kind, Date): EP 1153343 A1 011114 (Basic)

EP 1153343 B1 030507
WO 2000048074 000817

APPLICATION (CC, No, Date): EP 2000910124 000211; WO 2000US3411 000211
PRIORITY (CC, No, Date): US 248295 990211
DESIGNATED STATES: AT; BE; CH; CY; DE; DK; ES; FI; FR; GB; GR; IE; IT; LI;
LU; MC; NL; PT; SE
INTERNATIONAL PATENT CLASS: G06F-009/44
NOTE:

No A-document published by EPO
LANGUAGE (Publication,Procedural,Application): English; English; English
FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS B	(English)	200319	1239
CLAIMS B	(German)	200319	1138
CLAIMS B	(French)	200319	1324
SPEC B	(English)	200319	4622
Total word count - document A			0
Total word count - document B			8323
Total word count - documents A + B			8323

...SPECIFICATION as part of this relocation, the tag can be updated, even though lifetime is not a permanent property of the **object**.

USING POINTER TAGS TO IMPLEMENT A WRITE- BARRIER

FIG. 4 depicts a flowchart illustrating how **pointer tags** can be used to efficiently implement a write barrier in a generational **garbage collector**. Within the generational **garbage collector**, objects are allocated in newspace (step 400) and some of the objects are migrated into oldspace based on their lifetime...

11/3,K/3 (Item 3 from file: 348)
DIALOG(R)File 348:EUROPEAN PATENTS
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01005120

WRITE BARRIER APPARATUS AND METHOD FOR TRAPPING GARBAGE COLLECTION PAGE
BOUNDARY CROSSING POINTER STORES
SCHREIBSCHRANKEN-EINRICHTUNG UND VERFAHREN ZUM TRAPPING VON
ZEIGER-SCHREIBBEFEHLEN BEI GARBAGE-SAMMLUNGS-SEITENGRENZUBERSCHREITUNG
APPAREIL ET PROCEDE METTANT EN OEUVRE UNE BARRIERE D'ECRITURE POUR
INTERCEPTER DES COMMANDES D'ECRITURE DE POINTEURS AU FRANCHISSEMENT DE
FRONTIERE DE PAGE DE RECUPERATION DE POSITIONS LIBRES
PATENT ASSIGNEE:

SUN MICROSYSTEMS, INC., (1392733), 901 San Antonio Road, Palo Alto,
California 94303, (US), (Proprietor designated states: all)

INVENTOR:

O'CONNOR, James, Michael, 345 Ruth Avenue, Mountain View, CA 94043, (US)
TREMBLAY, Marc, Apartment 3, 801 Waverly Street, Palo Alto, CA 94301,
(US)
MISHIN, Sanjay, Apartment 89, 1055 Manet Avenue, Sunnyvale, CA 94087, (US)

LEGAL REPRESENTATIVE:

Freeman, Jacqueline Carol et al (72181), W.P. THOMPSON & CO. Celcon House
289-293 High Holborn, London WC1V 7HU, (GB)

PATENT (CC, No, Kind, Date): EP 914632 A1 990512 (Basic)
EP 914632 B1 011128
WO 9848352 981029

APPLICATION (CC, No, Date): EP 98915596 980421; WO 98US7623 980421
PRIORITY (CC, No, Date): US 841544 970423
DESIGNATED STATES: DE; GB; NL; SE
INTERNATIONAL PATENT CLASS: G06F-012/02
NOTE:

No A-document published by EPO
LANGUAGE (Publication,Procedural,Application): English; English; English
FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS B	(English)	200148	1166

CLAIMS B	(German)	200148	1101
CLAIMS B	(French)	200148	1510
SPEC B	(English)	200148	11547
Total word count - document A			0
Total word count - document B			15324
Total word count - documents A + B			15324

...SPECIFICATION simply record all writes while deferring checks for intergenerational pointers to collection time, the extensive use of hardware support for **garbage collection** in the Symbolics 3600 allowed efficient implementation of a page marking scheme. Three features of the Symbolics 3600 made this...

...a hardware write barrier ignored any word that was not a pointer to generational data. Whenever a reference to generational **memory** was stored into a page, the write- **barrier** hardware set a corresponding **bit** in the **garbage collection** page table. Second, a tagged architecture removed the need to consider object boundaries while performing collection time checks for intergenerational pointers since pointer words **always** be distinguished from non- **pointer** words using tags. The Symbolics 3600 accommodated a 2-bit major data type tag, a 4- **bit** minor tag and a 28- **bit** **address** in a 36-bit word. Finally, pages were smaller(horizontal bar)at 256 words(horizontal bar)than typical virtual memory pages, so a page could be scanned rapidly at collection time. See Jones & Lins, **Garbage Collection : Algorithms for Automatic Dynamic Memory Management** , pp. 169-70, Wiley (1996) (discussing page marking with hardware support on the Symbolics 3600); see also Moon, Architecture of...stores.

Figure 8 depicts an illustrative remembered set based generational collector approach that can be supported by architectural support for **garbage collection** in accordance with this invention.

The use of the same reference symbols in different drawings indicates similar or identical items...

...be illustrative of the invention and should not be taken to be limiting.

Architectural support described herein for isolation of **garbage collection** generations includes an intergenerational **pointer** store trap matrix, **object** reference generation **tagging** , a write **barrier** responsive the intergenerational **pointer** store trap matrix and **object** reference generation **tagging** , a **garbage collection** trap handler, and facilities for selective dynamic replacement of pointer-non-specific instructions with pointer-specific instructions with write barrier...

...embodiments in accordance with the present invention may employ various forms of such architectural support for isolating generations in a **garbage collected** system. Although such architectural support may be provided in hardware, in software, or in a combination of hardware and software...of an object reference (objectref) as represented in hardware processor 100. Three bits of the objectref can be used for **garbage collection** hints. In particular, a field GC(underscore)TAG forms part of an index into register field GC(underscore)CONFIG.WB...

...whether write barrier 430 traps a pointer store as described above. In the embodiment of Figure 5, field GC(underscore) **TAG** encodes generation membership **information** for use by write **barrier** 430 as described above. An additional handle **bit** H indicates whether the object is referenced by the objectref directly or indirectly-through a handle. Handles provide a referencing...another embodiment, write barrier 430 (as implemented by the pointer-specific quick variant bytecode) supports both intergenerational store trapping and **garbage collection** page boundary crossing pointer store trapping. As before, this embodiment of write **barrier** 430 forms a four- **bit** index by concatenating the most significant two bits of each of the objectref and store(underscore)data operand thereto. This...field GC(underscore)PAGE(underscore)MASK, i.e., bits 27:16, of register GC(underscore)CONFIG. This second trigger is **guarded** a **garbage collection** pages enabled **bit** GCE of processor state register PSR. In one embodiment of execution unit 140 (Fig. 1),

logic circuits for bytecode evaluation...

...will recognize a variety of suitable implementations.

An advantageous alternative embodiment of write barrier 430 provides a mechanism to restrict **garbage collection** page boundary crossing checks to a particular generation or generations, typically an oldest generation, of a collected memory space. Modified page check trapping equations, e.g., require that generation **tag bits** (e.g., **bits** 31:30) of the objectref and store(underscore)data operands be equal. To allow flexibility for encoding an oldest generation...e.g., interpreter, just-in-time compiler, etc.) implementations of a virtual machine instruction processor employing various of a intergenerational **pointer** store trap matrix, **object** reference generation **tagging**, a write **barrier** responsive the intergenerational **pointer** store trap matrix and **object** reference generation **tagging**, a **garbage collection** trap handler, and/or facilities for selective dynamic replacement of pointer-non-specific instructions with pointer-specific instructions with write...

11/3,K/4 (Item 4 from file: 348)

DIALOG(R) File 348:EUROPEAN PATENTS

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00962956

Method and apparatus for locating nodes in a carded heap

Verfahren und Vorrichtung zur Lokalisierung von Knoten in einem in Karten geteilten Haufen

Procede et dispositif de localisation de noeuds dans un tas partage en cartes

PATENT ASSIGNEE:

SUN MICROSYSTEMS, INC., (1392730), 2550 Garcia Avenue, Mountain View, CA 94043, (US), (Applicant designated States: all)

INVENTOR:

Wolczko, Mario I., 580 Arastradero Road, No. 503, Palo Alto, California 94306, (US)

Ungar, David M., 844 Driftwood Drive, Palo Alto, California 94303, (US)

LEGAL REPRESENTATIVE:

Foster, Mark Charles (86071), Edward Evans & Co., Chancery House, 53-64 Chancery Lane, London WC2A 1SD, (GB)

PATENT (CC, No, Kind, Date): EP 874319 A2 981028 (Basic)

EP 874319 A3 000223

APPLICATION (CC, No, Date): EP 98303165 980423;

PRIORITY (CC, No, Date): US 842136 970423

DESIGNATED STATES: DE; FR; GB

EXTENDED DESIGNATED STATES: AL; LT; LV; MK; RO; SI

INTERNATIONAL PATENT CLASS: G06F-012/02

ABSTRACT WORD COUNT: 158

NOTE:

Figure number on first page: 2

LANGUAGE (Publication,Procedural,Application): English; English; English

FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	9844	1467
SPEC A	(English)	9844	15687
Total word count - document A			17154
Total word count - document B			0
Total word count - documents A + B			17154

...SPECIFICATION operation of scanning the card indicators to find the marked cards is an overhead operation because a large number of **memory** locations (those containing the **marking** vector) must be examined to locate the marked cards.

A card marking implementation is described in A Fast Write Barrier for Generational **Garbage Collectors** by Urs Holzle, presented at the OOPSLA'93 **Garbage Collection** Workshop in Washington D.C. in October 1993. This paper is included by reference as illustrative of the prior

art and can be found on the internet at:

"<http://self.sunlabs.com/papers/write-barrier.html>".

Object Oriented Programming

Object oriented programming (OOP) is a methodology for building computer software. Key OOP concepts include data encapsulation, inheritance and polymorphism. While...

11/3,K/5 (Item 5 from file: 348)
DIALOG(R)File 348:EUROPEAN PATENTS
(c) 2004 European Patent Office. All rts. reserv.

00962947

Method and apparatus for optimizing exact garbage collection of objects having intermingled pointer and non-pointer values

Verfahren und Gerat zur Optimierung der exakten Garbagesammlung von Objekten mit sowie Zeigerwerten als Nonzeigerwerten

Procede et dispositif pour optimiser le regroupement exact des positions inutilisees des objets ayant des valeurs pointeur et non-pointeur

PATENT ASSIGNEE:

SUN MICROSYSTEMS, INC., (1392730), 2550 Garcia Avenue, Mountain View, CA 94035, (US), (applicant designated states:

AT;BE;CH;CY;DE;DK;ES;FI;FR;GB;GR;IE;IT;LI;LU;MC;NL;PT;SE)

INVENTOR:

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Wolczko, Mario, 580 Arastradero Road, No. 503, Palo Alto, California 94306, (US)

LEGAL REPRESENTATIVE:

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PATENT (CC, No, Kind, Date): EP 874309 A2 981028 (Basic)

EP 874309 A3 990421

APPLICATION (CC, No, Date): EP 98303151 980423;

PRIORITY (CC, No, Date): US 838958 970423

DESIGNATED STATES: DE; FR; GB; NL; SE

INTERNATIONAL PATENT CLASS: G06F-012/02; G06F-009/44;

ABSTRACT WORD COUNT: 103

LANGUAGE (Publication,Procedural,Application): English; English; English

FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	9844	1459
SPEC A	(English)	9844	15330
Total word count - document A			16789
Total word count - document B			0
Total word count - documents A + B			16789

...SPECIFICATION operation of scanning the card indicators to find the marked cards is an overhead operation because a large number of memory locations (those containing the marking vector) must be examined to locate the marked cards.

A card marking implementation is described in A Fast Write Barrier for Generational Garbage Collectors by Urs Holzle, presented at the OOPSLA'93 Garbage Collection Workshop in Washington D.C. in October 1993. This paper is included by reference as illustrative of the prior art and can be found on the internet at:

"<http://self.sunlabs.com/papers/write-barrier.html>".

Object Oriented Programming

Object oriented programming (OOP) is a methodology for building computer software. Key OOP concepts include data encapsulation, inheritance and polymorphism. While...

11/3,K/6 (Item 6 from file: 348)

00962885

A method and apparatus for locating object pointers used within exact
garbage collection

Verfahren und Vorrichtung zum Auffinden von Objekt-Zeigern, für die
Erkennung/Sammlung von nicht-referenzierten Daten-Objekten

Procede et dispositif de traitement numerique permettant de localiser des
pointeurs pour collecter des objets de donnees inutiles

PATENT ASSIGNEE:

SUN MICROSYSTEMS, INC., (1392737), 901 San Antonio Road, MS PAL1-521,
Palo Alto, California 94043, (US), (Proprietor designated states: all)

INVENTOR:

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94306, (US)

Unger, David M., 844 Driftwood Drive, Palo Alto, California 94303, (US)

LEGAL REPRESENTATIVE:

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PATENT (CC, No, Kind, Date): EP 874318 A2 981028 (Basic)
EP 874318 A3 990421
EP 874318 B1 010725

APPLICATION (CC, No, Date): EP 98303014 980420;

PRIORITY (CC, No, Date): US 842195 970423

DESIGNATED STATES: DE; FR; GB; NL; SE

INTERNATIONAL PATENT CLASS: G06F-012/02

ABSTRACT WORD COUNT: 144

NOTE:

Figure number on first page: NONE

LANGUAGE (Publication,Procedural,Application): English; English; English

FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	199844	1527
CLAIMS B	(English)	200130	789
CLAIMS B	(German)	200130	663
CLAIMS B	(French)	200130	981
SPEC A	(English)	199844	15476
SPEC B	(English)	200130	14924
Total word count - document A			17006
Total word count - document B			17357
Total word count - documents A + B			34363

...SPECIFICATION operation of scanning the card indicators to find the
marked cards is an overhead operation because a large number of **memory**
locations (those containing the **marking** vector) must be examined to
locate the marked cards.

A card marking implementation is described in A Fast Write Barrier for
Generational **Garbage Collectors** by Urs Holzle, presented at the
OOPSLA'93 **Garbage Collection** Workshop in Washington D.C. in October
1993. This paper is included by reference as illustrative of the prior
art and can be found on the internet at:

"<http://self.sunlabs.com/papers/write-barrier.html>".

Object Oriented Programming

Object oriented programming (OOP) is a methodology for building
computer software. Key OOP concepts include data encapsulation,
inheritance and polymorphism. While...

...SPECIFICATION operation of scanning the card indicators to find the
marked cards is an overhead operation because a large number of **memory**
locations (those containing the **marking** vector) must be examined to
locate the marked cards.

A card marking implementation is described in A Fast Write Barrier for
Generational **Garbage Collectors** by Urs Holzle, presented at the
OOPSLA'93 **Garbage Collection** Workshop in Washington D.C. in October

1993. This paper is illustrative of the prior art and can be found on the internet at:

"<http://self.sunlabs.com/papers/write-barrier.html>".

Object Oriented Programming

Object oriented programming (OOP) is a methodology for building computer software. Key OOP concepts include data encapsulation, inheritance and polymorphism. While...

11/3,K/7 (Item 7 from file: 348)
DIALOG(R) File 348:EUROPEAN PATENTS
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00962884

A method and apparatus for optimizing exact garbage collection, using loop operation on pointer arrays

Verfahren und Vorrichtung zur Optimierung der präzisen Speicherbereinigung, bei der Programmschleifen mit Zeiger-Feldern verwendet werden

Procede et dispositif d'optimisation de la recuperation d'espace memoire inutilisee, dans le cas d'operation de bouclage sur des pointeurs d'un champ de donnees.

PATENT ASSIGNEE:

SUN MICROSYSTEMS, INC., (1392737), 901 San Antonio Road, MS PAL1-521, Palo Alto, California 94043, (US), (Proprietor designated states: all)

INVENTOR:

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LEGAL REPRESENTATIVE:

Hanna, Peter William Derek (72342), Peter Hanna Associates 11 Mespil Road, Dublin 4, (IE)

PATENT (CC, No, Kind, Date): EP 874317 A2 981028 (Basic)
EP 874317 A3 990421
EP 874317 B1 010613

APPLICATION (CC, No, Date): EP 98303013 980420;

PRIORITY (CC, No, Date): US 842139 970423

DESIGNATED STATES: DE; FR; GB; NL; SE

INTERNATIONAL PATENT CLASS: G06F-012/02

ABSTRACT WORD COUNT: 130

NOTE:

Figure number on first page: NONE

LANGUAGE (Publication,Procedural,Application): English; English; English

FULLTEXT AVAILABILITY:

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CLAIMS A	(English)	199844	1444
CLAIMS B	(English)	200124	677
CLAIMS B	(German)	200124	641
CLAIMS B	(French)	200124	856
SPEC A	(English)	199844	15615
TEXT B	(English)	200124	14699
Full word count - document A			17062
Full word count - document B			16873
Full word count - documents A + B			33935

...SPECIFICATION operation of scanning the card indicators to find the marked cards is an overhead operation because a large number of **memory** locations (those containing the **marking** vector) must be examined to locate the marked cards.

A card marking implementation is described in A Fast Write Barrier for Generational **Garbage Collectors** by Urs Holzle, presented at the OOPSLA'93 **Garbage Collection** Workshop in Washington D.C. in October 1993. This paper is included by reference as illustrative of the prior art and can be found on the internet at:

"<http://self.sunlabs.com/papers/write-barrier.html>".

Object Oriented Programming

Object oriented programming (OOP) is a methodology for building computer software. Key OOP concepts include data encapsulation, inheritance and polymorphism. While...

11/3,K/8 (Item 1 from file: 349)
DIALOG(R)File 349:PCT FULLTEXT
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00811368 **Image available**

METHOD AND APPARATUS FOR MONITORING A CACHE FOR GARBAGE COLLECTION PROCEDE ET DISPOSITIF DE CONTROLE DE MEMOIRE CACHE EN VUE DE LA RECUPERATION D'ESPACE MEMOIRE

Patent Applicant/Assignee:

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Inventor(s):

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Antonio Mario, 580 Arastradero, #503, Palo Alto, CA 94306, US,

Attorney Representative:

HECKER Gary A (et al) (agent), The Hecker Law Group, Suite 2300, 1925

Century Park East, Los Angeles, CA 90067, US,

Patent and Priority Information (Country, Number, Date):

Patent: WO 200144947 A1 20010621 (WO 0144947)

Application: WO 2000US33439 20001206 (PCT/WO US0033439)

Priority Application: US 99466335 19991217

Designated States: AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CR CU CZ

DE DK DM DZ EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ

LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ PL PT RO RU SD SE SG

SI SK SL TJ TM TR TT TZ UA UG UZ VN YU ZA ZW

(EP) AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE TR

((OAPI utility model)) BF BJ CF CG CI CM GA GN GW ML MR NE SN TD TG

(AP) GH GM KE LS MW MZ SD SL SZ TZ UG ZW

(EA) AM AZ BY KG KZ MD RU TJ TM

Publication Language: English

Filing Language: English

Fulltext Word Count: 8015

Fulltext Availability:

Claims

English Abstract

A method and apparatus for monitoring a cache for **garbage collection** are described. In a computer system comprising a cache and memory, a software and/or hardware flush monitor monitors cache...

...are performed separately by hardware to permit cache optimizations normally precluded by software handlers. The flush monitor implements a write **barrier** between the cache and **memory**, scanning dirty cache lines for references to objects within the cache. One or more flush buffers may be used to...

...of flushed cache lines may be stored in a buffer for deferred handling by the flush monitor. Within the cache, **objects** are **marked** as non-local **objects** if those **objects** are at least partially resident in **memory** or have been referenced from **memory**. The **marking** of non-local **objects** enables **garbage collection** of first generation objects to be performed within the cache without accessing objects in memory. For example, local objects that...

Claim

... more frequently used objects will remain in cache memory. Thus, when object references must be traced, as is done in **garbage collection**, timeconsuming accesses outside of the cache memory may be frequent, resulting in inefficient memory performance.

SUMMARY OF THE INVENTION

A method and apparatus for monitoring a cache for **garbage collection**

are described. In a computer system comprising a cache and memory, a flush monitor monitors flushes of dirty cache lines...

...separately to permit cache optimizations normally precluded by monolithic cache handlers implemented in software. The flush monitor implements a write **barrier** between the cache and **memory**, scanning dirty cache lines for references to objects within the cache. In some embodiments of the invention, one or more...

...later scanning. Multiple cache lines may then be scanned by a single pass of the flush monitor, Within the cache, **objects** are **marked** as non-local **objects** if those **objects** are at least partially resident in **memory** or have been referenced from **memory**. The **marking** of non-local **objects** enables **garbage collection** of first generation objects to be performed within the cache without accessing objects in memory. For example, local objects

11/3,K/9 (Item 2 from file: 349)
DIALOG(R)File 349:PCT FULLTEXT
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00764227 **Image available**

MOSTLY CONCURRENT COMPACTION IN A GARBAGE COLLECTION SYSTEM
COMPACTION ESSENTIELLEMENT CONCURRENTE DANS UN SYSTEME DE RECUPERATION DE
L'ESPACE MEMOIRE

Patent Applicant/Assignee:

SUN MICROSYSTEMS INC, 901 San Antonio Road, MS UPALI-521, Palo Alto, CA
94303, US, US (Residence), US (Nationality)

Inventor(s):

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Legal Representative:

LEBOVICI Victor B (et al) (agent), Weingarten, Schurgin, Gagnebin & Hayes
LLP, 10 Post Office Square, Boston, MA 02109, US,

Patent and Priority Information (Country, Number, Date):

Patent: WO 200077644 A1 20001221 (WO 0077644)

Application: WO 2000US15713 20000607 (PCT/WO US0015713)

Priority Application: US 99329908 19990610

Designated States: AE AL AM AT AU AZ BA BB BG BR BY CA CH CN CR CU CZ DE DK

DM EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR

LS LT LU LV MA MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ

TM TR TT TZ UA UG UZ VN YU ZA ZW

(EP) AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE

(OA) BF BJ CF CG CI CM GA GN GW ML MR NE SN TD TG

(AP) GH GM KE LS MW MZ SD SL SZ TZ UG ZW

(EA) AM AZ BY KG KZ MD RU TJ TM

Publication Language: English

Filing Language: English

Fulltext Word Count: 8138

Fulltext Availability:

Detailed Description

Detailed Description

... regard to program

execution.

IS BRIEF SUMMARY OF THE INVENTION

In accordance with principles of the invention, a system for **garbage collection** is disclosed which substantially addresses the shortcomings of prior systems. In the disclosed system, memory that has been allocated to...

...identities to the data structure, may be performed concurrently with execution of the program. Concurrently with these steps, a write **barrier** **marks** regions of **memory**

in which one or more pointers have been modified by the program. The write barrier operates, for example, by setting...

11/3,K/10 (Item 3 from file: 349)
DIALOG(R)File 349:PCT FULLTEXT
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00334761 **Image available**

MEMORY MANAGEMENT WITHIN A RUN-TIME ENVIRONMENT
GESTION DE LA MEMOIRE DANS UN SYSTEME ESSENTIEL

Patent Applicant/Assignee:

ORACLE CORPORATION, 500 Oracle Parkway, Redwood Shores, CA 94065, US, US
(Residence), US (Nationality)

Inventor(s):

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UNIETIS David, 756 18th Avenue, Menlo Park, CA 94025, US
BENSON Peter, 1115 Burr Trail Road, Boulder, UT 84716, US

Legal Representative:

HICKMAN Brian D, McDermott, Will & Emery, 600 13th Street, N.W.,
Washington, DC 20005-3096, US

Patent and Priority Information (Country, Number, Date):

Patent: WO 200048074 A1 20000817 (WO 0048074)
Application: WO 2000US3411 20000211 (PCT/WO US0003411)
Priority Application: US 99248295 19990211

Designated States: AE AL AM AT AU AZ BA BB BG BR BY CA CH CN CR CU CZ DE DK
DM EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR
LS LT LU LV MA MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ
TM TR TT TZ UA UG UZ VN YU ZA ZW

(EP) AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE
(OA) BF BJ CF CG CI CM GA GN GW ML MR NE SN TD TG
(AP) GH GM KE LS MW SD SL SZ TZ UG ZW
(EA) AM AZ BY KG KZ MD RU TJ TM

Publication Language: English

Filing Language: English

Fulltext Word Count: 8458

Fulltext Availability:

Detailed Description

Detailed Description

... as part of this relocation, the tag can be updated, even though
lifetime is not a permanent property of the object .

USING POINTER TAGS TO IMPLEMENT A WRITE-BARRIER

FIG. 4 depicts a flowchart illustrating how pointer tags can be used
to efficiently implement a write barrier in a generational garbage
collector . Within the generational garbage collector , objects are
allocated in newspace (step 400) and some of the objects are migrated
into oldspace based on their lifetime...

11/3,K/11 (Item 4 from file: 349)
DIALOG(R)File 349:PCT FULLTEXT
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00536345 **Image available**

STORED DATA OBJECT MARKING FOR GARBAGE COLLECTORS

MARQUAGE D'OBJETS DE DONNEES MEMORISES POUR PROGRAMMES RECUPERATEURS

Patent Applicant/Assignee:

KONINKLIJKE PHILIPS ELECTRONICS N V,
PHILIPS AB,

Inventor(s):

HOULDSWORTH Richard J,
MORRIS Steven,

Patent and Priority Information (Country, Number, Date):

Patent: WO 9967697 A2 19991229

Application: WO 99IB1088 19990610 (PCT/WO IB9901088)
Priority Application: GB 9813266 19980620
Designated States: JP KR AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT
SE
Publication Language: English
Fulltext Word Count: 4853

Fulltext Availability:

Detailed Description

Detailed Description

... less than the maintained first count, with the processor being configured to then undertake a further sweep to identify and **mark** root **objects** for the remaining finaliser-reachable **objects**, whilst if the detected and maintained totals match, the processor is arranged to reclass as deletable all pending objects with no further sweep undertaken.

In operation, heap data **objects** carrying finalisers may suitably include a respective **flag** which, when set, **prevents** the **object** from being reclassified as **deletable**. In such an arrangement, the maintained first count may suitably be incremented on setting of the flag, and decremented on its removal. In order to cope with the occurrence, possible in incremental **garbage collection**, of the total number of heap objects carrying finalisers changing as the sweep progresses, a second count may be maintained of the ongoing number of **marked** finalisable **objects** detected during a sweep with this second count value being subtracted from the detected total of objects carrying finalisers at...

11/3,K/12 (Item 5 from file: 349)
DIALOG(R)File 349:PCT FULLTEXT
(c) 2004 WIPO/Univentio. All rts. reserv.

00479459 **Image available**

DATA PROCESSOR WITH LOCALISED MEMORY RECLAMATION
PROCESSEUR DE DONNEES A RECUPERATION DE MEMOIRE LOCALISEE

Patent Applicant/Assignee:

KONINKLIJKE PHILIPS ELECTRONICS N V,
PHILIPS AB,

Inventor(s):

HOULSDWORTH Richard James,

Patent and Priority Information (Country, Number, Date):

Parent: WO 9910811 A1 19990304

Application: WO 98IB1087 19980716 (PCT/WO IB9801087)

Priority Application: GB 9717715 19970822

Designated States: JP KR AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT
SE

Publication Language: English

Fulltext Word Count: 5350

Fulltext Availability:

Detailed Description

Detailed Description

... can be deleted, giving faster turn-around of garbage, which leads to more free memory. Also, since the work of **garbage collection** of active data is linked to the actual threads that access the data, global **garbage collection** load is reduced. In order to avoid "accidental" deletion of objects having existing pointers thereto in other heap objects when all reference stack **pointers** have been removed, a global **flag** may be carried by each **object** (or in the associated handle table **entry**). The global **flag** is set when **pointers** exist in other heap objects and **prevent deletion** of the object during the local garbage clearance operation.

To avoid the necessity to maintain a second object index (in...

11/3,K/13 (Item 6 from file: 349)
DIALOG(R)File 349:PCT FULLTEXT
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00457889

WRITE BARRIER SYSTEM AND METHOD INCLUDING POINTER-SPECIFIC INSTRUCTION
VARIANT REPLACEMENT MECHANISM
SYSTEME ET PROCEDE DE BARRIERE D'ECRIURE COMPRENANT UN MECANISME DE
REPLACEMENT VARIANT D'UNE INSTRUCTION SPECIFIQUE D'UN POINTEUR

Patent Applicant/Assignee:

SUN MICROSYSTEMS INC,

Inventor(s):

O'CONNOR James Michael,

TREMBLAY Marc,

VISHIN Sanjay,

Patent and Priority Information (Country, Number, Date):

Patent: WO 9848353 A1 19981029

Application: WO 98US7624 19980421 (PCT/WO US9807624)

Priority Application: US 97841508 19970423

Designated States: JP KR AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT
SE

Publication Language: English

Fulltext Word Count: 14488

Fulltext Availability:

Detailed Description

English Abstract

...An exemplary write barrier provided in accordance with the pointer-specific instruction variant replacement mechanism of this invention affords a **garbage collector** implementer with support for a wide variety of **garbage collection** methods, including remembered set-based methods, card-marking type methods, write barrier based copying collector methods, mark-sweep methods, etc., as well as combinations thereof and combinations including train algorithm type methods to managing mature portions of a generationally collected **memory** space. Such a write **barrier** can eliminate non-pointer stores from the set of stores that are evaluated against, for example, an intergenerational pointer store trap matrix or a **garbage collection** page mask to determine whether or not to trap. Such a write barrier can also eliminate entries associated with non...

Detailed Description

... simply record all writes while deferring checks for intergenerational pointers to collection time, the extensive use of hardware support for **garbage collection** in the Symbolics 3600 allowed efficient implementation of a page marking scheme. Three features of the Symbolics 3600 made this...

...a hardware write barrier ignored any word that was not a pointer to generational data. Whenever a reference to generational **memory** was written into a page, the write- **barrier** hardware set a corresponding **bit** in the **garbage collection** page table. Second, a tagged architecture removed the need to consider object boundaries while performing collection time checks for intergenerational pointers since pointer words would always be distinguished from non- **pointer** words using tags. The Symbolics 3600 accomodated a 2-bit major data type tag, a 4- **bit** minor tag and a 28- **bit** address in a 36-bit word. Finally, pages were smaller-at 256 words-than typical virtual memory pages, so a page could be scanned rapidly at collection time. See Jones & Lins, **Garbage Collection** .

Algorithmsfor **Automatic Dynamic Memory Management** , pp. 169-70, Wiley (I 996) (discussing page marking with hardware support on the Symbolics 3600); see also Moon, Architecture...stores.

Figure 8 depicts an illustrative remembered set based generational

collector approach that can be supported by architectural support for **garbage collection** in accordance with this invention.

The use of the same reference symbols in different drawings indicates ...be illustrative of the invention and should not be taken to be limiting.

Architectural support described herein for isolation of **garbage collection** generations includes an intergenerational **pointer** store trap matrix, **object** reference generation **tagging**, a write **barrier** responsive the 1 5 intergenerational **pointer** store trap matrix and **object** reference generation **tagging**, a **garbage collection** trap handler, and facilities for selective dynamic replacement of pointer-non-specific instructions with pointerspecific instructions with write barrier support...barrier implementation.

Figure 4 depicts programmable store filtering support in the context of a four generation collected memory space 450. **Garbage collector** process 420 includes bytecodes executable on hardware processor 100 for implementing a generational collector in which remembered sets 460 record ...

...inter stores made by mutator process 410. Exemplary contents of intergenerational pointer store trap matrix 470, which correspond to the contents of field WB-VECTOR, encode a write **barrier** to a younger generation I 0 **pointer** stores. **Tags**, which are encoded as described below, for the generation associated with a store data pointer value and the generation associated...of an object reference (objectref) as represented in hardware processor 100. Three bits of the objectref can be used for **garbage collection** hints. In particular, a field GC

TAG forms part of an index into register field GC-CONFIG.WB-VECTOR to determine whether write barrier 430 traps a pointer store as described above. In the embodiment of Figure 5, field GC

TAG encodes generation membership **information** for use by write **barrier** 430 as described above. An additional handle **bit** I 0 H indicates whether the object is referenced by the objectref directly or indirectly-through a handle. Handles provide...e.g., interpreter, just-in-time compiler, etc.) implementations of a virtual machine instruction processor employing various of a intergenerational **pointer** store trap matrix, **object** reference generation **tagging**, a write **barrier** responsive the intergenerational **pointer** store trap matrix and **object** reference generation **tagging**, a **garbage collection** trap handler, and/or facilities for selective dynamic replacement of pointer-non-specific instructions with pointer-specific instructions with write...

11/3,K/14 (Item 7 from file: 349)
PALOOS(R) File 349:PCT FULLTEXT
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00457888 **Image available**

WRITE BARRIER SYSTEM AND METHOD FOR TRAPPING GARBAGE COLLECTION PAGE
BOUNDARY CROSSING POINTER STORES
SYSTEME ET PROCEDE METTANT EN OEUVRE UNE BARRIERE D'ECRITURE POUR
INTERCEPTER DES MEMOIRES POUR POINTEURS EN TANT QUE POINTS
D'INTERSECTION DE FRONTIERE POUR UNE PAGE DE RECUPERATION DE POSITIONS
LIBRES

Patent Applicant/Assignee:

SUN MICROSYSTEMS INC,

Inventor(s):

O'CONNOR James Michael,

TREMBLAY Marc,

VISHIN Sanjay,

Patent and Priority Information (Country, Number, Date):

Patent: WO 9848352 A1 19981029

Application: WO 98US7623 19980421 (PCT/WO US9807623)

Priority Application: US 97841544 19970423
Designated States: JP KR AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT
SE
Publication Language: English
Fulltext Word Count: 14081
Fulltext Availability:
Detailed Description

Detailed Description

... simply record all writes while deferring checks for intergenerational pointers to collection time, the extensive use of hardware support for **garbage collection** in the Symbolics 3600 allowed efficient implementation of a page marking scheme. Three features of the Symbolics 3600 made this...

... hardware write barrier ignored any word that was not a pointer to generational data. Whenever a reference to generational **memory** was stored into a page, the write- **barrier** hardware set a corresponding **bit** in the **garbage collection** page table. Second, a tagged architecture removed the need to consider object boundaries while performing collection time checks for intergenerational pointers since pointer words could always be distinguished from non- **pointer** words using tags. The Symbolics 3600 accommodated a 2-bit major data type tag, a 4- **bit** minor **tag** and a 28- **bit** **address** in a 36-bit word. Finally, pages were smaller-at 256 words-than typical virtual memory pages, so a page could be scanned rapidly at collection time. See Jones & Lins, **Garbage Collection**.

Algorithms for **Automatic Dynamic Memory Management**, pp. 169-70, Wiley (1996) (discussing page marking with hardware support on the Symbolics 3600); see also Moon, Architecture...stores.

Figure 8 depicts an illustrative remembered set based generational collector approach that can be supported by architectural support for **garbage collection** in accordance with this invention.

The use of the same reference symbols in different drawings indicates similar or identical items...should not be taken to be limiting.

Architectural support described herein for isolation of garbage collection generations includes an intergenerational **pointer** store trap matrix, **object** reference generation **tagging**, a write **barrier** responsive to the intergenerational **pointer** store trap matrix and **object** reference generation **tagging**, a **garbage collection** trap handler, and facilities for selective dynamic replacement of pointer-non-specific instructions with pointerspecific instructions with write barrier support

...embodiments in accordance with the present invention may employ various aspects of such architectural support for isolating generations in a **garbage collected** system. Although such architectural support may be provided in hardware, in software, or in a combination of hardware and software...barrier implementation.

Figure 4 depicts programmable store filtering support in the context of a four generation collected memory space 450. **Garbage collector** process 420 includes bytecodes executable on hardware processor 100 for implementing a generational collector in which remembered sets 460 record

...pointer stores made by mutator process 410. Exemplary contents of intergenerational pointer store trap matrix 470, which correspond to the **contents** of field WB-VECTOR, encode a write **barrier** to a younger generation **pointer** stores. **Tags**, which are encoded as described below, for the generation associated with a store data pointer value and the generation associated...e.g., interpreter, just-in-time compiler, etc.) implementations of a virtual machine instruction processor employing various of a intergenerational **pointer** store trap matrix, **object** reference generation **tagging**, a write **barrier** responsive to the

intergenerational **pointer** store trap matrix and **object** reference generation **tagging**, a **garbage collection** trap handler, and/or facilities for selective dynamic replacement of pointer-non-specific instructions with pointer-specific instructions with write...

11/3,K/15 (Item 8 from file: 349)

DIALOG(R)File 349:PCT FULLTEXT

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00467887 **Image available**

GENERATION ISOLATION SYSTEM AND METHOD FOR GARBAGE COLLECTION
SYSTEME ET PROCEDE D'ISOLEMENT PAR GENERATION MIS EN OEUVRE POUR RECUPERER
DES POSITIONS LIBRES

Patent Applicant/Assignee:

SUN MICROSYSTEMS INC,

Inventor(s):

O'CONNOR James Michael,

TREMBLAY Marc,

VISHIN Sanjay,

Patent and Priority Information (Country, Number, Date):

Patent: WO 9848351 A1 19981029

Application: WO 98US7622 19980421 (PCT/WO US9807622)

Priority Application: US 97841543 19970423

Designated States: JP KR AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT
SE

Publication Language: English

Fulltext Word Count: 14371

Fulltext Availability:

Detailed Description

Detailed Description

... simply record all writes while deferring checks for intergenerational pointers to collection time, the extensive use of hardware support for **garbage collection** in the Symbolics 3600 allowed efficient implementation of a page marking scheme. Three features of the Symbolics 3600 made this...

...a hardware write barrier ignored any word that was not a pointer to generational data. Whenever a reference to generational **memory** was stored into a page, the write- **barrier** hardware set a corresponding **bit** in the **garbage collection** page table. Second, a tagged architecture removed the need to consider object boundaries while performing collection time checks for intergenerational pointers since pointer words could always be distinguished from non- **pointer** words using tags. The Symbolics 3600 accommodated a 2-bit major data type tag, a 4- **bit** minor **tag** and a 28- **bit** **address** in a 36-bit ...256 words-than typical virtual memory pages, so a page could be scanned rapidly at collection time. See Jones & Lins, **Garbage Collection** .

See **Algorithms for Automatic Dynamic Memory Management**, pp. 169-70, Wiley (1996) (discussing page marking with hardware support on the Symbolics 3600); see also Moon, **Architecture of...stores**.

Figure 8 depicts an illustrative remembered set based generational collector approach that can be supported by architectural support for **garbage collection** in accordance with this invention.

The use of the same reference symbols in different drawings indicates similar or identical items...

...of the invention and should not be taken to be limiting I 0
Architectural support described herein for isolation of **garbage collection** generations includes an intergenerational **pointer** store trap matrix, **object** reference generation **tagging**, a write **barrier** responsive to the intergenerational **pointer** store trap matrix and **object** reference generation **tagging**, a **garbage collection** trap handler,

and facilities for selective dynamic replacement of pointer-non-specific instructions with pointerspecific instructions with write barrier support
...

...embodiments in accordance with the present invention may employ various aspects of such architectural support for isolating generations in a **garbage collected** system. Although such architectural support may be provided in hardware, in software, or in a combination of hardware and software...implementation.

- 12 Figure 4 depicts programmable store filtering support in the context of a four generation collected memory space 450. **Garbage collector** process 420 includes bytecodes executable on hardware processor 100 for implementing a generational collector in which remembered sets 460 record
...

...pointer stores made by mutator process 410. Exemplary contents of intergenerational pointer store trap matrix 470, which correspond to the **contents** of field WB-VECTOR, encode a write **barrier** to a younger generation **pointer** stores. **Tags**, which are encoded as described below, for the generation associated with a store data pointer value and the generation associated **pointer** store if **tags** associated with value and objectref indicate that a reference to a younger generation object is being stored into an older generation object, invoking **garbage collection** trap handler (gc notify) 440.

Based on the description herein, those of skill in the art will appreciate a...embodiment of an object reference (objectref) as represented in hardware processor 100. Three bits of the objectrefcan be used for **garbage collection** hints. In particular, a field GC-TAG forms part of an index into register field GC-CONFIGM13-VIECTOR to determine whether write barrier 430 traps a pointer store as described above. In the embodiment of Figure 5, field GC - **TAG** encodes generation membership **information** for use by write **barrier** 430 as described above. An additional handle **bit** H indicates whether the object is referenced by the objectref directly or indirectly-through a handle. Handles provide a referencing...e. a., interpreter, just-in-time compiler, etc.) implementations of a virtual machine instruction processor employing various of a intergenerational **pointer** store trap matrix, **object** reference generation **tagging**, a write **barrier** responsive the intergenerational **pointer** store trap matrix and **object** reference generation **tagging**, a **garbage collection** trap handler, and/or facilities for selective dynamic replacement of pointer-non-specific instructions with pointer-specific instructions with write...

11/3,K/16 (Item 9 from file: 349)
DIALOG(R) File 349:PCT FULLTEXT
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00229185 **Image available**

METHOD AND APPARATUS FOR IDENTIFYING MEMORY LEAKS AND TRACKING POINTERS IN A COMPUTER PROGRAM

PROCEDE ET APPAREIL DESTINE A IDENTIFIER DES FUITES DE MEMOIRE ET A RECHERCHER DES POINTEURS DANS UN PROGRAMME INFORMATIQUE

Patent Applicant/Assignee:

PURE SOFTWARE INC,

Inventor(s):

HASTINGS Reed,

PAWES John,

Patent and Priority Information (Country, Number, Date):

Patent: WO 9303435 A1 19930218

Application: WO 92US6419 19920803 (PCT/WO US9206419)

Priority Application: US 91259 19910808

Designated States: AT AU BB BG BR CA CH CS DE DK ES FI GB HU JP KP KR LK LU
MG MN MW NL NO PL RO RU SD SE AT BE CH DE DK ES FR GB GR IE IT LU MC NL

SE BF BJ CF CG CI CM GA GN ML MR SN TD TG
Publication Language: English
Fulltext Word Count: 5339

Fulltext Availability:
Detailed Description

Detailed Description

... are no longer
being used, and returns them to the system. A common method
-for garbage collecting is known as "**mark** -and-sweep". With this
method the **data** and stack sections of the program memory are
examined for all potential pointers (words whose value is a
valid address) into the heap. If a potential pointer points to
an allocated block in the heap, that block is **marked** as in-use,
and all potential **pointers** within the block are recursively
examined in the same manner. Then, the entire heap is
examined, and all allocated blocks no longer in-use, now
garbage, are freed.

Garbage collectors have been implemented in a variety
of languages,, but in many, only imperfectly. Unfortunately, in
all languages **garbage collectors** tend to slow down program
execution, and the languages for which they work best are often
disfavored by programmers for other reasons. For these reasons
many programmers choose not to use **garbage collectors**, and
attempt to rely on explicit **memory** deallocation. For this,
programmers, especially on **protected memory** systems, need a
development tool that can help them identify pan-system memory
leaks.

A related problem, which surfaces while...

...type to another. Pointers are frequently
copied across types, especially to the void* type, making it
difficult to get useful **information** simply from a type **tag**. A
typical case is that a **pointer** gets cast as a void* generic
pointer, and is then passed around from function to function,
A programmer looking at...

File 275:Gale Group Computer DB(TM) 1983-2004/Mar 19
(c) 2004 The Gale Group
File 621:Gale Group New Prod.Annou.(R) 1985-2004/Mar 19
(c) 2004 The Gale Group
File 636:Gale Group Newsletter DB(TM) 1987-2004/Mar 19
(c) 2004 The Gale Group
File 16:Gale Group PROMT(R) 1990-2004/Mar 19
(c) 2004 The Gale Group
File 160:Gale Group PROMT(R) 1972-1989
(c) 1999 The Gale Group
File 148:Gale Group Trade & Industry DB 1976-2004/Mar 19
(c)2004 The Gale Group
File 14:McGraw-Hill Publications 1985-2004/Mar 18
(c) 2004 McGraw-Hill Co. Inc
File 15:ABI/Inform(R) 1971-2004/Mar 18
(c) 2004 ProQuest Info&Learning
File 647:CMP Computer Fulltext 1988-2004/Mar W1
(c) 2004 CMP Media, LLC
File 674:Computer News Fulltext 1989-2004/Mar W1
(c) 2004 IDG Communications
File 696:DIALOG Telecom. Newsletters 1995-2004/Mar 19
(c) 2004 The Dialog Corp.
File 369:New Scientist 1994-2004/Mar W2
(c) 2004 Reed Business Information Ltd.

Set	Items	Description
S1	6491	GARBAGE(2N)COLLECT? OR AUTOMAT?(2N)MEMOR???(2N)MANAG? OR R- ECYCL???(3N) (MEMORY OR RAM)
S2	149063	(DELET? OR ERAS??? OR PURG??? OR CLEAN??? OR CLEAR??? OR F- LUSH??? OR WIP??? OR ELIMINAT?) (3N) (DATA OR INFORMATION OR OB- JECT? ? OR CONTENT? ? OR ITEM? ? OR MEMORY OR MEMORIES OR RAM OR BIT? ? OR BYTE? ?)
S3	96810	(RESTRICT? OR PROHIBIT? OR STOP? OR PREVENT? OR IMPED? OR - SUPPRESS? OR DETER? ? OR DETERRING OR BAR? ? OR BARRED OR BARR- ING OR FORBID?) (7N) (DELET? OR ERAS??? OR PURG??? OR CLEAN??? - OR CLEAR??? OR FLUSH? OR WIP??? OR ELIMINAT?)
S4	348904	(PROTECT? OR SAFEGUARD??? OR GUARD??? OR SHIELD??? OR BARR- IER OR DEFEND? OR DEFENSE) (7N) (DATA OR INFORMATION OR OBJECT? ? OR CONTENT? ? OR ITEM? ? OR MEMORY OR MEMORIES OR RAM OR BI- T? ? OR BYTE? ?)
S5	1541344	(MARK???? OR MARKER? ? OR FLAG? ? OR FLAGGING OR TAG? ? OR TAGGING OR LABEL?) (7N) (DATA OR INFORMATION OR OBJECT? ? OR CO- NTENT? ? OR ITEM? ? OR ENTRY OR ENTRIES OR MEMOR??? OR RAM OR BIT? ? OR BYTE? ? OR ADDRESS?? OR POINTER??)
S6	467541	STACK? ? OR QUEUE? ? OR FIFO OR ((FIRST OR LAST) () IN) (1N) (- (FIRST OR LAST) () OUT) OR BUFFER? ? OR CACHE? ?
S7	10	S1(50N)S3:S4(50N)S5
S8	552	S2(50N)S3:S4(50N)S5
S9	21826	(DELET? OR ERAS???) (3N) (DATA OR INFORMATION OR OBJECT? ? OR CONTENT? ? OR ITEM? ? OR MEMORY OR MEMORIES OR RAM OR BIT? ? OR BYTE? ?)
S10	135	S9(50N)S3:S4(50N)S5
S11	80	RD (unique items)
S12	13624	S3:S4(15N)S5
S13	34	S9(50N)S12
S14	44	S7 OR S13
S15	27	RD (unique items)

15/9/15 (Item 2 from file: 16)
DIALOG(R) File 16:Gale Group PROMT(R)
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05922073 Supplier Number: 53157291 (THIS IS THE FULLTEXT)
Garbage collection key in soft real-time. (Technology Information)

Dickey, Laura

Electronic Engineering Times, p124(1)

Nov 2, 1998

ISSN: 0192-1541

Language: English Record Type: Fulltext

Document Type: Magazine/Journal; Trade

Word Count: 1449

TEXT:

Java removes the burden of memory management from the programmer by shifting it to the virtual machine. The developer need only trust that memory will be handled properly. With embedded systems, however, memory management must be more than correct-it must also be efficient, with as little overhead as possible on the application.

The usual approach to using less memory when writing embedded applications is to allocate as little dynamic memory as possible. Java makes this more difficult, because almost everything is an object, allocated from a dynamic heap. Careful coding practices can reduce the number of objects created; however, if this practice is carried to its extreme, many of the benefits and power of using Java are lost. Prudent coding practices and a low-overhead garbage collection are therefore essential to reduce the overhead of dynamic memory allocations. By choosing the type of garbage collection used and tuning the collector, acceptable soft real-time performance can be achieved for a given application.

Garbage collectors typically use either an incremental or batch approach. Batch garbage collection requires that all other activity on the system stop while garbage collection occurs. Batch collectors are easier to implement; however, they require pauses in user code execution while the garbage collector runs. For real-time systems, this is generally too unpredictable. Incremental garbage collection, on the other hand, can run concurrently with user code, using spare processing cycles to collect unreferenced objects. It can also be requested explicitly, if, for example, the user application knows it has spare cycles.

Once objects are identified, various algorithms can determine which objects are no longer in use. Reference counting is a conceptually simple way to track unused objects. Each time an object is accessed, its reference count is increased. When that reference goes away, the reference count is decreased. When the reference count goes to zero, the object can be freed. While this may appear to spread the work of garbage collection throughout the execution of the program, there are two problems: the overhead of incrementing and decrementing the reference count can be prohibitively high. And, if the last reference to an object is removed, the program may block for an arbitrary amount of time while all objects that the newly freed object referred to have their reference counts decremented. As a result, latency suffers and real-time performance may not be adequate.

The other method is tracing, which starts with a "root set" of objects and searches them for embedded references to other heap objects. All objects that can be reached from the root set are considered live objects. All others not found by tracing are unreachable, and can be collected. The advantages of tracing are that it can continue while the program executes, and it imposes a lower overhead. Some synchronization between the garbage collector and the application may be required, but usually the collector only needs to be notified of modifications to objects that occur during a garbage-collection cycle.

Once all unreferenced objects have been found, they can be freed, typically using relocating or non-relocating algorithms. Relocating garbage collection moves each referenced object to a new location in memory, sometimes called "Tospace." All objects left in "Fromspace" are garbage and can be freed. The meanings of Tospace and Fromspace are then reversed, in preparation for another garbage-collection cycle.

This approach reduces memory fragmentation; however, it requires twice as much memory as a non-relocating collector. In addition, if the algorithm is implemented incrementally while the application continues to

run, the application must notify the collector during each memory access, in case an object has been moved. This significantly increases overhead.

By contrast, a non-relocating algorithm determines which objects are not garbage, and then does not move them. Instead, it identifies which objects can be deleted, and does so. Because the objects will no longer be referenced by the application, no synchronization is needed to delete the objects. The chief disadvantage of non-relocating algorithms is that they lead to memory fragmentation. More-intelligent memory allocators can help, but they cannot always guarantee that memory will not become fragmented. In addition, the collector must always have an accurate picture of what objects are being referenced and modified by the application threads, so objects are not prematurely freed.

The ideal garbage-collection algorithm for embedded systems would impose minimal overhead on memory operations, and be capable of running in the background.

It would get enough processor time to ensure that there is always free memory available, but not so much time as to pre-empt application code. Finally, the ideal algorithm would never cause user threads to block for more than a short, fixed period of time.

A paper published by the Association of Computing Machinery (ACM) entitled "Portable, Unobtrusive Garbage Collection for Multiprocessor Systems" by Doligez and Gonthier (1994) described a garbage-collection algorithm that addresses many of these concerns. Using a mark-sweep algorithm, the garbage collector imposes a minimal amount of overhead on user threads. It also supports garbage collection in a multithreaded or multiprocessor environment.

Garbage is detected by first marking all active, referenced objects, and then sweeping through all allocated objects, searching for any objects that were not marked. These objects can be considered garbage, and can then be finalized, if necessary, and deleted. While the algorithm they describe was not designed with Java in mind, it can be implemented in a Java Virtual Machine quite easily. A garbage collector based on this algorithm runs incrementally. It uses conservative pointer finding to locate objects, and sweeping to determine which objects are no longer in use. Its method of collection is non-relocating.

Several triggers

Garbage collection can be triggered in several ways, perhaps when the amount of memory allocated by all threads exceeds a threshold value. This value could be customized at run-time. The user also can explicitly request that the garbage collector be run. Or, the garbage collector can be triggered if the virtual machine has run out of either objects or memory.

The incremental garbage collector runs in a separate thread, concurrent with user threads. Most of the time, the collector thread is blocked, waiting for a garbage-collection pass to be triggered.

Essentially, garbage collection begins by marking all active objects. To start this process, the "root set" of each user or user thread must be marked. For Java, the root set consists of all the Java references currently in the thread's Java stack. Because it is important for the root set to be marked accurately, this is the one time when user threads must be synchronized with the garbage collector. Once this step is finished, user threads can continue to execute.

If handles are used as an abstraction to represent Java object references, they can aid in the search for pointers that must occur during a garbage-collection cycle. A fixed number of handles is allocated from an array, which provides a valid memory range for all handles. When searching for references in the Java stack or heap objects, the value of memory locations is compared with the valid range of handles. All non-allocated handles are set to zero. Although a spurious integer value could cause a valid object to be falsely referenced, it would never cause a non-valid object to be considered garbage.

A tricolor algorithm is used to mark objects. All allocated objects initially start out as white, or unreferenced. When an object is first marked, it is colored gray. Given the starting set of marked objects, the garbage collector then searches each gray object, looking for object references embedded in the each gray heap object. Once a heap object is recursively scanned, it is colored black, to indicate it does not need to be revisited.

Meanwhile, user threads can continue to change or create new object

references. A write **barrier** is used to synchronize user thread activity with the **garbage collector**. At the creation of a new object, or when an existing object reference is modified, the object goes gray. The **garbage collector** thread then knows that this object must be re-scanned.

The **garbage collector** continues to scan the heap, looking for gray objects. To ensure the end of this phase, the creation of new objects is suspended during each pass over the array of handles. Once a pass finds no gray **objects**, the **marking** cycle ends, with all **objects** either black (referenced) or white (**garbage**).

The **garbage collector** then "sweeps" through the heap, looking for all white, or unreferenced, objects. These are now candidates for finalization, and ultimately deletion. Once the collector thread has completed the sweep, it deletes objects determined to be unreferenced. The thread can then go back to sleep, blocking until it receives another request for garbage collection.

15/3,K/1 (Item 1 from file: 275)
DIALOG(R)File 275:Gale Group Computer DB(TM)
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00159223 SUPPLIER NUMBER: 20404045 (USE FORMAT 7 OR 9 FOR FULL TEXT)
Final destruction. (Java finalizer eliminates need for memory management)
(Java Advisor) (Technology Tutorial) (Column)
Waldo, Jim
UNIX Review's Performance Computing, v1, n1, p77(3)
April, 1998
DOCUMENT TYPE: Column LANGUAGE: English RECORD TYPE: Fulltext;
Abstract
WORD COUNT: 1937 LINE COUNT: 00159

... is destroyed.
The Java analog to the destructor is the finalizer. This is a method associated with any object that runs between the time the **object** has been marked for **garbage collection** (that is, when there are no longer any references to the object) and the time that the object is actually collected.
This method is called...

...a void return value and takes no arguments, is defined as part of the base definition of the root of the object hierarchy, the class **object**. The method is declared **protected** so only subclasses can access the **finalize()** method of a class.
The standard example for the use of the **finalize()** method is a class used...

15/3,K/2 (Item 2 from file: 275)
DIALOG(R)File 275:Gale Group Computer DB(TM)
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02058394 SUPPLIER NUMBER: 19167496 (USE FORMAT 7 OR 9 FOR FULL TEXT)
All's safe on the Internet front. (Norman Data Defense Systems' Norman Firewall) (Product Announcement) (Brief Article)
Schwartz, David
HP Professional, v11, n2, p15(1)
Feb, 1997
DOCUMENT TYPE: Product Announcement Brief Article ISSN: 0896-145X
LANGUAGE: English RECORD TYPE: Fulltext
WORD COUNT: 463 LINE COUNT: 00041

... destination IP address, port, physical device, user ID and permission, and network security labels. It also includes a configurable protected audit subsystem and an encrypted **protected** password database. **Object** reuse ensures **deleted data** and closed sessions stay that way. **Labels** assign a level of protection for every device and file, and a level of authorization for every user and program. The administrator assigns hierarchical levels...

15/3,K/3 (Item 3 from file: 275)
DIALOG(R)File 275:Gale Group Computer DB(TM)
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02037539 SUPPLIER NUMBER: 19134562 (USE FORMAT 7 OR 9 FOR FULL TEXT)
1,001 best Internet tips. (descriptions of Internet products, services) (Technology Information) (Technology Tutorial) (Tutorial)
PC/Computing, v10, n3, p116(31)
March, 1997
DOCUMENT TYPE: Tutorial ISSN: 0899-1847 LANGUAGE: English
RECORD TYPE: Fulltext; Abstract
WORD COUNT: 23319 LINE COUNT: 01785

... and click on the Cache tab. Now press the buttons marked Clear Memory Cache Now and Clear Disk Cache Now.

Web Publishing
DeltaPoint QuickSite
Speedy Deletion

Mark **items** you want **deleted** by double-clicking to the right of the Time column of a project **item**. When the project file is compressed, **marked items** will be **deleted**.

Custom-Built

Create custom pages by **stopping** QuickSite from automatically generating header and footer information for a text page. When you do this QuickSite uses only the HTML present in the Web...

15/3,K/4 (Item 4 from file: 275)

DIALOG(R)File 275:Gale Group Computer DB(TM)

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01671434 SUPPLIER NUMBER: 17891008 (USE FORMAT 7 OR 9 FOR FULL TEXT)
Hasselblad upgrades Image Depot database; integrates system with Malardata.

(Hasselblad Electronic Imaging's production database for images adds

Malardata's editorial and advertising systems) (Product Announcement)

Seybold Report on Publishing Systems, v25, n6, p39(1)

Nov 30, 1995

DOCUMENT TYPE: Product Announcement ISSN: 0736-7260 LANGUAGE:

English RECORD TYPE: Fulltext

WORD COUNT: 975 LINE COUNT: 00078

... it to include image management and image production in their current systems.

Image Depot stores images using the iptc header format, with additional newspaper-specific **information** if necessary.

Deleting items from the database and the online storage can be done in a couple of ways. At entry, an image can be timestamped for deletion, e.g., seven days from reception. Different settings can be used for different sources. Images can be protected to **prevent** them from being **deleted**.

Images can be **purged** either automatically on a first-in, first-out basis, with **items marked** for **deletion** given higher priority, or strictly on the basis of the user's marking **items** for **deletion**, in which case they are removed during the night as a batch job.

The system also supports archiving images on cds.

Editing images. The original...

15/3,K/5 (Item 5 from file: 275)

DIALOG(R)File 275:Gale Group Computer DB(TM)

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01672080 SUPPLIER NUMBER: 15040329 (USE FORMAT 7 OR 9 FOR FULL TEXT)

An online service for the future. (I/O: Readers Respond) (Column)

Hammerstein, Brian

Digital Media, v3, n8, p2(2)

Jan 31, 1994

DOCUMENT TYPE: Column ISSN: 1056-7038 LANGUAGE: ENGLISH

RECORD TYPE: FULLTEXT

WORD COUNT: 1783 LINE COUNT: 00140

... buffer of arbitrary size on a first-in, first-purged basis. Some items, such as mail messages, information the member wants to save permanently or **information** the service has **deleted** permanently from the host, could have special **flags** to **prevent** their **deletion** from the buffer. **Items** downloaded with a surcharge would have maximum persistence in the buffer, perhaps complete permanence.

It is time for a fundamental shift in the way we...

15/3,K/6 (Item 6 from file: 275)

DIALOG(R)File 275:Gale Group Computer DB(TM)

(c) 2004 The Gale Group. All rts. reserv.

01617050 SUPPLIER NUMBER: 14343346 (USE FORMAT 7 OR 9 FOR FULL TEXT)
Javelin Plus. (Information Resources Inc.) (Software Review) (one of six
evaluations of spreadsheet software packages in 'New Dimensions in
Spreadsheets') (Evaluation)
Stinson, Craig; Stevenson, Ted; Gottesman, Ben Z.
PC Magazine, v12, n16, p205(3)
Mar 29, 1993
DOCUMENT TYPE: Evaluation ISSN: 0888-8507 LANGUAGE: ENGLISH
RECORD TYPE: FULLTEXT; ABSTRACT
WORD COUNT: 1088 LINE COUNT: 00083

... command and the summary variable becomes part of the database. In
the two single-variable graph views, you can even add or alter constant
(nonformulaic) **data** by manipulating chart **markers** . Unlike true
spreadsheet-oriented modelers (such as Lotus Improv and CA-Compete!),
however, Javelin **protects** you from destroying worksheet **data** . **Deleting**
a column on Javelin's worksheet has no effect on the underlying data.

PINPOINTING TIME

Every variable in Javelin has an implicit time dimension, including...

15/3,K/7 (Item 7 from file: 275)
DIALOG(R)File 275:Gale Group Computer DB(TM)
(c) 2004 The Gale Group. All rts. reserv.

01584105 SUPPLIER NUMBER: 13399646 (USE FORMAT 7 OR 9 FOR FULL TEXT)
An introduction to Win32 heap and virtual memory management routines.
(Technical)
Richter, Jeffrey
Microsoft Systems Journal, v8, n3, p15(20)
March, 1993
DOCUMENT TYPE: Technical ISSN: 0889-9932 LANGUAGE: ENGLISH
RECORD TYPE: FULLTEXT; ABSTRACT
WORD COUNT: 9380 LINE COUNT: 00725

... index into the array of CELLDATA structures, I need to either
enable the Use button and disable the clear button or vice versa.

* In the **garbage collection** function, I need to see if a page is
committed before I actually test to see if the flnUse **flag** is set.

* In the **memory** map, I need to know which pages are free, reserved,
and committed.

I determine the state of an address space by calling the VirtualQuery
function, which I'll discuss shortly.

Altering Protection Attributes

While your process executes, it may want to change the **protection**
rights of its **data** . For example, say you have code to manage a linked
list, the nodes of which you are keeping in virtual memory. You could
design the functions that process the linked list so that they change the
protection rights of the **memory** to PAGE...

15/3,K/8 (Item 1 from file: 621)
DIALOG(R)File 621:Gale Group New Prod.Annou.(R)
(c) 2004 The Gale Group. All rts. reserv.

03541841 Supplier Number: 108541329 (USE FORMAT 7 FOR FULLTEXT)
Olixir Technologies Launches Industry's First Ruggedized, Portable 3.5-Inch
Hard Disk Drive for Fast, Easy, Affordable Backup and External Storage;
Incorporating Patented Shock-Protection Technology, Olixir's
High-Capacity Mobile DataVault 3DX Combines the Portability and High
Capacity of Tape With the Speed and Ease-of-Use of Hard Disk Drives.
Newswire, pNA
Mar 29, 1993
Language: English Record Type: Fulltext
Document Type: Newswire; Trade
Word Count: 738

... data loss today," said Randy Dugger, CEO of Dugger & Associates. "With any data storage system, shock damage from dropped or mishandled storage devices can permanently **delete** business critical **data**. Olixir's portable Mobile DataVault 3DX **protects** a high capacity of **data** like no other device on the **market** today. It's the simplest and easiest system to use to **protect**, secure, capture, and archive **data** every day."

Mobile DataVault 3DX Product Specifications

The 7,200 RPM Mobile DataVault 3DX includes 8MB of cache memory, allowing it to transfer a GB...

15/3,K/9 (Item 2 from file: 621)
DIALOG(R)File 621:Gale Group New Prod.Annou.(R)
(c) 2004 The Gale Group. All rts. reserv.

03087216 Supplier Number: 81592018 (USE FORMAT 7 FOR FULLTEXT)
Vircom and Norman Secure Strategic Anti-Virus Partnership; Partnership to Develop Intelligent Secure Messaging Solutions Targeted At SMB And Service Provider Markets.

PR Newswire, pHSF00611012002

Jan 11, 2002

Language: English Record Type: Fulltext

Document Type: Newswire; Trade

Word Count: 621

... of viruses -- will enhance the value of this new state-of-the-art mail server technology allowing providers to offer their customers the best mail **defense** system on the **market** today."

About Norman Data Defense Systems

The North American subsidiary of Norman ASA, Norman Data Defense Systems is a recognized **data** security specialist dedicated to providing computer security solutions and personalized customer care, with a particular focus on the SMB market. Norman's top-rated products include those for virus control, PC firewall protection, encryption, risk management and certified **data erasure**. To find out more about the company, visit Norman Data Defense Systems via the Internet at <http://www.norman.com/US>.

About Vircom Inc.

Vircom...

15/3,K/10 (Item 3 from file: 621)
DIALOG(R)File 621:Gale Group New Prod.Annou.(R)
(c) 2004 The Gale Group. All rts. reserv.

7/9 Supplier Number: 63250461 (USE FORMAT 7 FOR FULLTEXT)
SST Enters Embedded Mass Storage Market With Flash ATA-Disk Chip Products.

Business Wire, p0005

July 10, 2000

Language: English Record Type: Fulltext

Document Type: Newswire; Trade

Word Count: 1177

... offerings of the ADC in the future.

In addition to supporting ATA interfaces, SST's ADC products integrate advanced features critical to the embedded mass **data** storage markets. The ADC family includes a Write **Protect** (WP) pin to **protect** contents from external **erase** or over write. This feature is mandatory for secure information data storage for applications such as video-on-demand, interactive gaming, etc. The ADC pin...

15/3,K/11 (Item 4 from file: 621)
DIALOG(R)File 621:Gale Group New Prod.Annou.(R)
(c) 2004 The Gale Group. All rts. reserv.

01840870 Supplier Number: 54287342 (USE FORMAT 7 FOR FULLTEXT)
Hyundai Electronics Introduces 8 Mb -- x8/x16 -- Single-Supply 5 Volt Flash

Memory.

Business Wire, p0199

April 5, 1999

Language: English Record Type: Fulltext

Document Type: Newswire; Trade

Word Count: 794

... in top boot sector (HY29F800T) and bottom
boot sector (HY29F800B) versions.
-- Automatic Program and Erase Algorithms. Simplifies program and
erase software development, shortens time to **market**, and
protects
system code from inadvertent **data** loss.
-- **Erase** Suspend/Resume. Gives users flexibility to suspend the
erase operation to service other time-critical system
requirements.
-- Sector Protection. Disables writing to or erasing any...

15/3,K/12 (Item 5 from file: 621)

DIALOG(R)File 621:Gale Group New Prod.Annou.(R)

(c) 2004 The Gale Group. All rts. reserv.

01785620 Supplier Number: 53541876 (USE FORMAT 7 FOR FULLTEXT)

**Hyundai Electronics Introduces 8M Single-Supply 5-Volt Flash Memory; Fast
1M X 8 Device is First Member of Hyundai's 0.35U Flash Memory Family.**

Business Wire, pl265

Jan 11, 1999

Language: English Record Type: Fulltext

Document Type: Newswire; Trade

Word Count: 713

... allowing elimination
of an intermediate program storage medium such as DRAM.
-- Automatic Program and Erase Algorithms -- Simplifies program
and erase software development, shortens time to **market**
protects system code from inadvertent **data** loss.
-- **Erase** Suspend/Resume -- Gives users flexibility to suspend
the erase operation to service other time-critical system
requirements.
-- Sector Protection. Disables writing to or erasing any...

15/3,K/13 (Item 6 from file: 621)

DIALOG(R)File 621:Gale Group New Prod.Annou.(R)

(c) 2004 The Gale Group. All rts. reserv.

01217042 Supplier Number: 43791834 (USE FORMAT 7 FOR FULLTEXT)

RYBS ATLast Gets More Memory for DOS 6

News Release, pl

April 25, 1993

Language: English Record Type: Fulltext

Document Type: Magazine/Journal; Trade

Word Count: 508

... feature works even when a change is made across the network and is
not processed by the local node.

Version 8.17 properly detects and **protects** ROM and **RAM** memory
addresses for Token Ring Adapters in 15A and PS/2 Micro Channel bus
systems, eliminating frustrating conflicts during installation. And
for Novel SNA Gateway users...

...uses 100% of the available upper memory.

Dubbed the "Memory Manager's Manager" because of its ability to improve on the performance of any memory management software and automatically maintain upper memory optimization through change after change to the system, the newest release of ATLast! continues the tradition of innovative memory enhancements that have been the cornerstone of RYBS' success.

RYBS ELECTRONICS, Inc. brought the first ever memory management product to market in 1984, and went on to develop a full line of memory management software and hardware products that extend DOS beyond 640KO in all microcomputers...

15/3,K/14 (Item 1 from file: 16)
DIALOG(R)File 16:Gale Group PROMT(R)
(c) 2004 The Gale Group. All rts. reserv.

09321628 Supplier Number: 81221653 (USE FORMAT 7 FOR FULLTEXT)
RFID tracks packages, 'speaks' to consumers: smart packages not only improve supply chain management--they ensure product security, authentication. (Emerging Technology).

Barry, Christopher
Food & Drug Packaging, v65, n11, p53(4)
Nov, 2001
Language: English Record Type: Fulltext
Document Type: Magazine/Journal; Trade
Word Count: 1537

... problems require human intervention increasing the possibility of error.

* Bar codes can be prone to dirt and dust build-up, ink bleeding, array marks, dropouts, label warping and label tearing.

* Bar coded information cannot be erased, rewritten or appended.

* Bar codes can be counterfeited.
Checkpoint Systems
800-257-5540; www.checkpointsystems.com

En-Vision America
309-452-3088; www.envisionamerica.com

The Kennedy Group
440...

15/3,K/15 (Item 2 from file: 16)
DIALOG(R)File 16:Gale Group PROMT(R)
(c) 2004 The Gale Group. All rts. reserv.

05922073 Supplier Number: 53157291 (USE FORMAT 7 FOR FULLTEXT)
Garbage collection key in soft real-time. (Technology Information)

Dickey, Laura
Electronic Engineering Times, p124(1)
Nov 2, 1998
Language: English Record Type: Fulltext
Document Type: Magazine/Journal; Trade
Word Count: 1449

... a valid object to be falsely referenced, it would never cause a non-valid object to be considered garbage.

A tricolor algorithm is used to mark objects. All allocated objects initially start out as white, or unreferenced. When an object is first marked, it is colored gray. Given the starting set of marked objects, the garbage collector then searches each gray object, looking for object references embedded in the each gray heap object. Once a heap object is recursively scanned, it is colored black, to indicate it does not need to

re-revisited.

Meanwhile, user threads can continue to change or create new **object** references. A write **barrier** is used to synchronize user thread activity with the **garbage collector**. At the creation of a new object, or when an existing object reference is modified, the object goes gray. The **garbage collector** thread then knows that this object must be re-scanned.

The **garbage collector** continues to scan the heap, looking for gray objects. To ensure the end of this phase, the creation of new objects is suspended during each pass over the array of handles. Once a pass finds no gray **objects**, the **marking** cycle ends, with all **objects** either black (referenced) or white (**garbage**).

The **garbage collector** then "sweeps" through the heap, looking for all white, or unreferenced, objects. These are now candidates for finalization, and ultimately deletion. Once the collector thread...

15/3,K/16 (Item 3 from file: 16)
DIALOG(R)File 16:Gale Group PROMT(R)
(c) 2004 The Gale Group. All rts. reserv.

05741283 Supplier Number: 50222569 (USE FORMAT 7 FOR FULLTEXT)

A new VCR that can read

Sobel, Rachel K.; Wiener, Leonard; Charski, Mindy

U.S. News & World Report, v125, n5, p63

August 3, 1998

Language: English Record Type: Fulltext

Article Type: Article

Document Type: Magazine/Journal; General Trade

Word Count: 199

(USE FORMAT 7 FOR FULLTEXT)

TEXT:

...inserted, the VCR's table of contents lets you jump to a program for playback or to the longest clear spot for recording and can **protect** **items** from **erasure**. The unit--with five **labels**--goes on sale this month (list price, \$499; extra labels, \$10 for five). You'll probably want to read the owner's manual: This device...

15/3,K/17 (Item 4 from file: 16)
DIALOG(R)File 16:Gale Group PROMT(R)
(c) 2004 The Gale Group. All rts. reserv.

05775 Supplier Number: 47424655 (USE FORMAT 7 FOR FULLTEXT)

New ID system provides flexible RF/ID functionality

Automatic I.D. News, p48

June, 1997

Language: English Record Type: Fulltext

Document Type: Magazine/Journal; Trade

Word Count: 302

... ID tags are called Dura-Labels and are resistant to static electricity, UV light, temperature and voltage extremes. They can provide permanent memory technology to **prohibit data** from ever being **erased** or overwritten. The **labels** have an 18-inch read range and can be written to from 9 inches away. Data communication takes place in the 2.45 GHz frequency...

15/3,K/18 (Item 1 from file: 148)
DIALOG(R)File 148:Gale Group Trade & Industry DB
(c)2004 The Gale Group. All rts. reserv.

15769948 SUPPLIER NUMBER: 96892989 (USE FORMAT 7 OR 9 FOR FULL TEXT)

Businesses challenge European data directive. (Tech Talk).

Piazza, Peter

Security Management, 47, 1, 42(2)

Jan, 2003

ISSN: 0145-9406 LANGUAGE: English RECORD TYPE: Fulltext
WORD COUNT: 438 LINE COUNT: 00038

... more stringent provisions than called for in the directive--both of which "greatly increases the costs of compliance and distorts the functioning of the Internal **Market** without any concomitant improvement in **data protection**," according to the alliance's written response.

A submission from Citigroup elaborated on the same point. It gave as an example contradictory laws mandating when customer **data** can be deleted. "In Spain, the requirement is to **delete** all **data** from records as soon as the data controller as soon as the relationship ends.... In the U.K., data can be kept for a reasonable amount...

15/3,K/19 (Item 2 from file: 148)
DIALOG(R)File 148:Gale Group Trade & Industry DB
(c)2004 The Gale Group. All rts. reserv.

12751861 SUPPLIER NUMBER: 66123499 (USE FORMAT 7 OR 9 FOR FULL TEXT)
Logged On. (Virtual Link) (Brief Article) (Product Announcement)
BRALEY, SARAH J. F.
Meetings & Conventions, 35, 10, 21
Sept, 2000
DOCUMENT TYPE: Brief Article Product Announcement ISSN: 0025-8652
LANGUAGE: English RECORD TYPE: Fulltext
WORD COUNT: 115 LINE COUNT: 00012

TEXT:

...on the upper left corner of the board; it can "read" a board as large as four-by-eight feet. Special styluses hold standard dry- **erase markers** and feed **information** to the capture **bar**. The \$499 unit weighs just 2.5 pounds and folds up for easy storage. Add-ons include the \$249 BoardCast, which streams presentations over the...

15/3,K/20 (Item 3 from file: 148)
DIALOG(R)File 148:Gale Group Trade & Industry DB
(c)2004 The Gale Group. All rts. reserv.

11061476 SUPPLIER NUMBER: 20962254 (USE FORMAT 7 OR 9 FOR FULL TEXT)
A new VCR that can read. (Sony SLV-M20HF SmartFile can identify contents of tapes of TV shows) (Brief Article)
Wiener, Leonard
U.S. News & World Report, v125, n5, p63(1)
August 3, 1998
DOCUMENT TYPE: Brief Article ISSN: 0041-5537 LANGUAGE: English
RECORD TYPE: Fulltext
WORD COUNT: 206 LINE COUNT: 00018

TEXT:

...inserted, the VCR's table of contents lets you jump to a program for playback or to the longest clear spot for recording and can **protect items** from **erasure**. The unit--with five **labels**--goes on sale this month (list price, \$499; extra labels, \$10 for five). You'll probably want to read the owner's manual: This device...

15/3,K/21 (Item 4 from file: 148)
DIALOG(R)File 148:Gale Group Trade & Industry DB
(c)2004 The Gale Group. All rts. reserv.

10257135 SUPPLIER NUMBER: 20792286 (USE FORMAT 7 OR 9 FOR FULL TEXT)
Annual computer software guide: targeting and reaching the right customers more effectively.
Bruglach, Arthur
Direct Marketing, v61, n1, p17(10)
May, 1998
ISSN: 0012-3188 LANGUAGE: English RECORD TYPE: Fulltext; Abstract

WORD COUNT: 5858 LINE COUNT: 00525

... high performance postal automation, mail preparation and document generation software systems. Modules standardize and correct addresses, assign ZIP codes, ZIP+4 and carrier route codes, **bar -code information**, detect and **delete** duplicate records, create mailing **labels**, manipulate print images, and more. The software is certified for accuracy by the U.S. Postal Service.

System Specifications:

Data General AViiON Series DG/UX...

15/3,K/22 (Item 5 from file: 148)

DIALOG(R)File 148:Gale Group Trade & Industry DB

(c)2004 The Gale Group. All rts. reserv.

08498050 SUPPLIER NUMBER: 18050674 (USE FORMAT 7 OR 9 FOR FULL TEXT)

The use of process and output controls in foreign markets.

Gencturk, Esra F.; Aulakh, Preet S.

Journal of International Business Studies, v26, n4, p755(32)

Winter, 1995

ISSN: 0047-2506 LANGUAGE: English RECORD TYPE: Fulltext; Abstract

WORD COUNT: 11948 LINE COUNT: 01024

... of tariff barriers was added to this scale because of its importance in creating an attractive market for firms operating behind a tariff wall in **protected** host **markets**. However, this **item** was **deleted** in the purification stage due to its low item-to-total correlation.

Perceived Host Country Risk. Host country risk represents the perceived macro uncertainty and...

15/3,K/23 (Item 6 from file: 148)

DIALOG(R)File 148:Gale Group Trade & Industry DB

(c)2004 The Gale Group. All rts. reserv.

04536476 SUPPLIER NUMBER: 08824391 (USE FORMAT 7 OR 9 FOR FULL TEXT)

Take Tom Swanson's hands-on course in curing the pain of inventory.

Knill, Bernie

Material Handling Engineering, v45, n2, p56(4)

Feb, 1990

ISSN: 0025-5262 LANGUAGE: ENGLISH RECORD TYPE: FULLTEXT

WORD COUNT: 2559 LINE COUNT: 00194

... COMS balances are adjusted when items are orderfilled and removed from the warehouse.

When the load is taken from storage, the POLT, with bar coded **label** attached, is sent to **data** processing. Here the **bar** code is scanned to **delete** the **item** from the data bases.

Cycle counting

Tom Swanson points out that the distribution center has had cycle counting since the 60's. "Paperwork decreased as...

15/3,K/24 (Item 1 from file: 15)

DIALOG(R)File 15:ABI/Inform(R)

(c) 2004 ProQuest Info&Learning. All rts. reserv.

00689734 93-38955

MS-DOS upgraded, but do you need it?

Lindquist, Christopher

Computerworld v27n14 PP: 39-40 Apr 5, 1993

ISSN: 0010-4841 JRNL CODE: COW

WORD COUNT: 599

ABSTRACT: For every new utility that MS-DOS 6.0 offers, there is something, usually with more features, already on the **market**. **Data** compression,

automated memory management , backup, virus protection , disk caching, file transfers, and support for multiple configurations are all available from 3rd-party vendors. Ease of use is one advantage that MS-DOS

...TEXT: party solutions to their problems.

For every new utility that MS-DOS 6.0 offers, there is something usually with more features, already on the market . Data compression, automated memory management , backup, virus protection , disk caching, file transfers, support for multiple configurations: All are available from third-party vendors.

Granted, the average user buying a machine with MS-DOS...

15/3,K/25 (Item 2 from file: 15)
DIALOG(R)File 15:ABI/Inform(R)
(c) 2004 ProQuest Info&Learning. All rts. reserv.

00465617 89-37404

Planning: A Means to Achieve Data Communications Security

Wood, Charles Cresson

Computers & Security v8n3 PP: 189-199 May 1989

ISSN: 0167-4048 JRNL CODE: CSC

...ABSTRACT: Some control measures are: 1. Implement software that supports standard message authentication code processes for data in motion and at rest. 2. Install mechanisms to prevent the unauthorized change or deletion of data sensitivity labels used on the network. 3. Develop filters that permit only selected users to send electronic mail and files to certain other users. 4. Replace hand...

15/3,K/26 (Item 3 from file: 15)
DIALOG(R)File 15:ABI/Inform(R)
(c) 2004 ProQuest Info&Learning. All rts. reserv.

00293894 85-34328

Floppy Diskette Security Measures

Wood, Charles Cresson

Computers & Security v4n3 PP: 223-228 Sep 1985

ISSN: 0167-4048 JRNL CODE: CSC

...ABSTRACT: diskettes are, to many people, external to the computer security area, and so are frequently ignored. Nonetheless, these diskettes often contain sensitive and/or crucial data . Some methods for appropriately protecting information resident on floppy diskettes are: 1. data classification, 2. sensitivity marking , 3. individual accountability, 4. backup and archiving, 5. encryption, 6. file/diskette indexes, and 7. data ' ' erasure ' ' and destruction.

15/3,K/27 (Item 1 from file: 647)
DIALOG(R)File 647:CMP Computer Fulltext
(c) 2004 CMP Media, LLC. All rts. reserv.

01177061 CMP ACCESSION NUMBER: EET19981102S0088

Garbage collection key in soft real-time

Laura Dickey, Software Architect, Hewlett-Packard Co., Embedded Software Operation, Palo Alto, Calif.

ELECTRONIC ENGINEERING TIMES, 1998, n 1033, PG124

PUBLICATION DATE: 981102

JOURNAL CODE: EET LANGUAGE: English

RECORD TYPE: Fulltext

SECTION HEADING: Embedded Systems - Focus Consumer Computing

WORD COUNT: 1456

... a valid object to be falsely referenced, it would never cause a

non-valid object to be considered garbage.

A tricolor algorithm is used to **mark** objects. All allocated objects initially start out as white, or unreferenced. When an object is first marked, it is colored gray. Given the starting set of marked objects, the **garbage collector** then searches each gray object, looking for object references embedded in the each gray heap object. Once a heap object is recursively scanned, it is colored black, to indicate it does not need to be revisited.

Meanwhile, user threads can continue to change or create new **object** references. A write **barrier** is used to synchronize user thread activity with the **garbage collector**. At the creation of a new object, or when an existing object reference is modified, the object goes gray. The **garbage collector** thread then knows that this object must be re-scanned.

The **garbage collector** continues to scan the heap, looking for gray objects. To ensure the end of this phase, the creation of new objects is suspended during each pass over the array of handles. Once a pass finds no gray objects, the **marking** cycle ends, with all objects either black (referenced) or white (**garbage**).

The **garbage collector** then "sweeps" through the heap, looking for all white, or unreferenced, objects. These are now candidates for finalization, and ultimately deletion. Once the collector thread...